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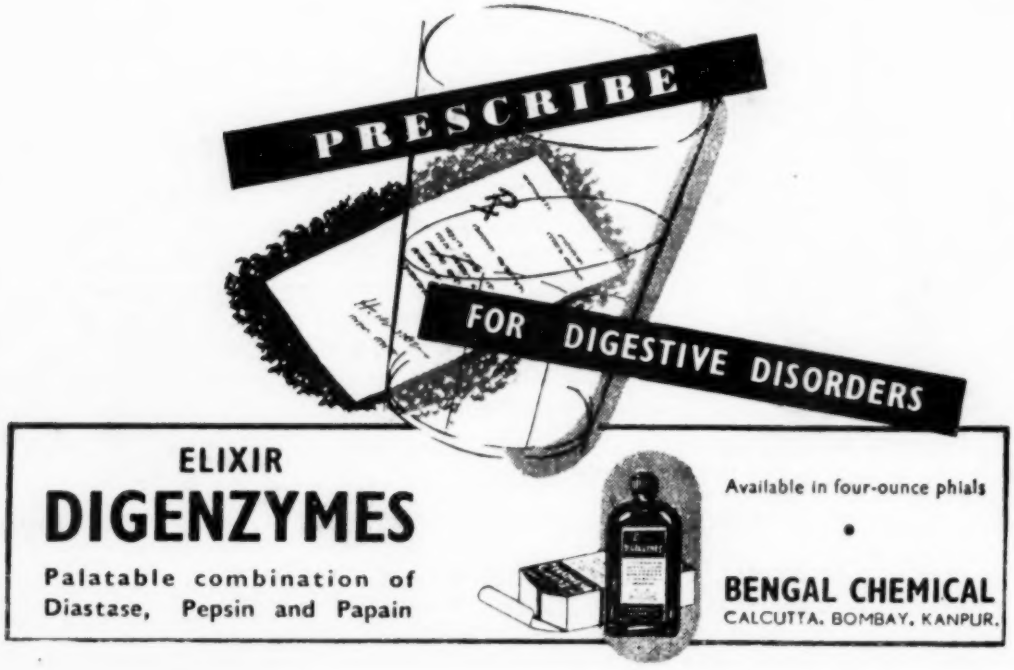
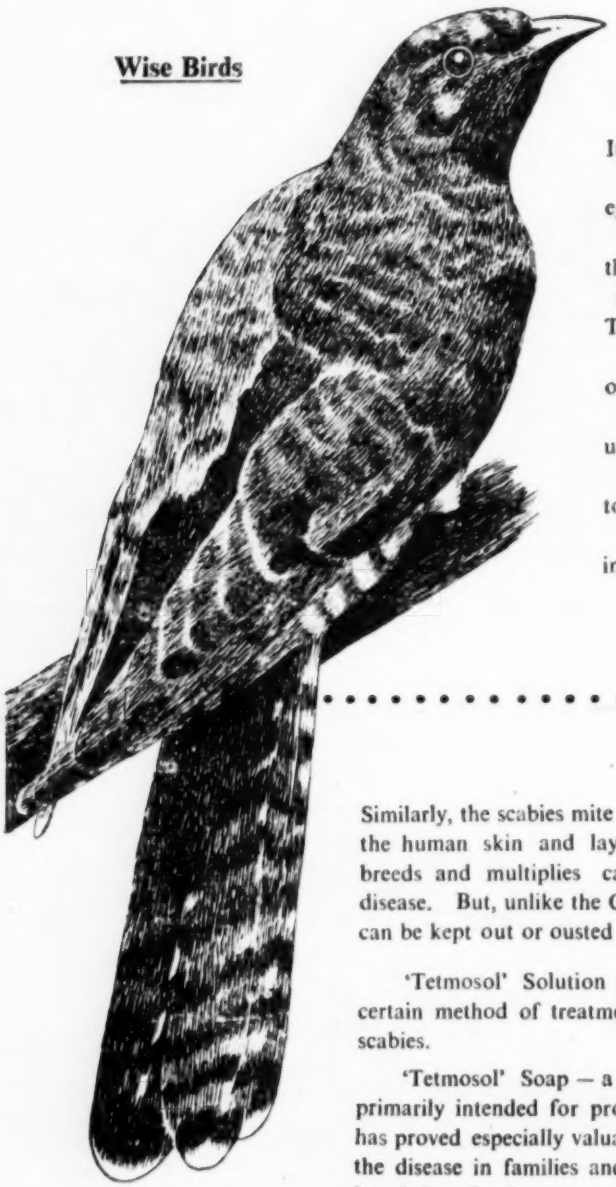


Wise Birds



It is with the greatest cunning that the mother Cuckoo first removes an egg from a strange nest before laying her own egg in its place. Thus the suspicions of the 'home birds' are allayed, and hatching will continue. The young Cuckoo is no less cunning in his ability to oust all other objects from the nest in which he finds himself. Be it baby bird or unhatched egg, all are incontinently tilted over the edge of the nest to fall with a crash on the ground below. Thus the *intruder* is left in sole possession of the nest.

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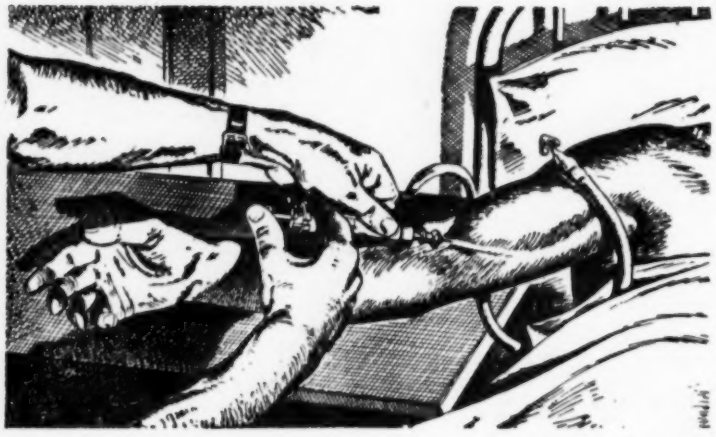

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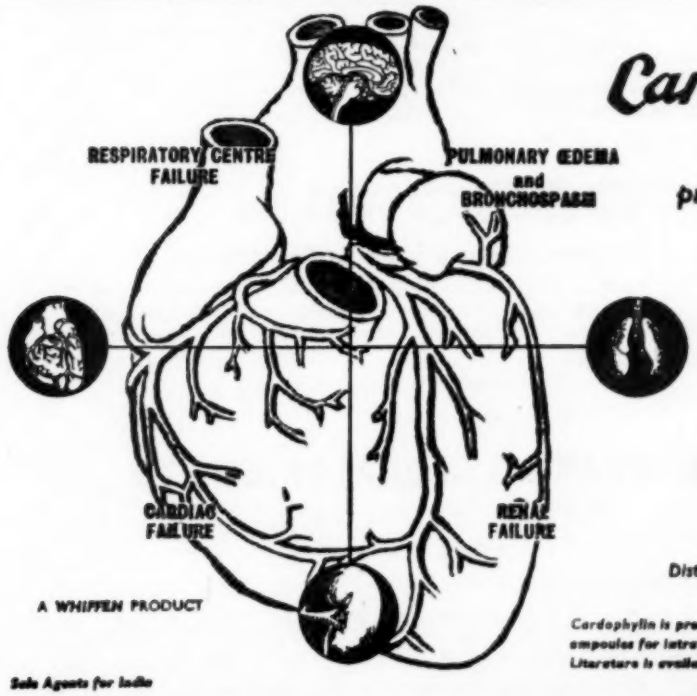

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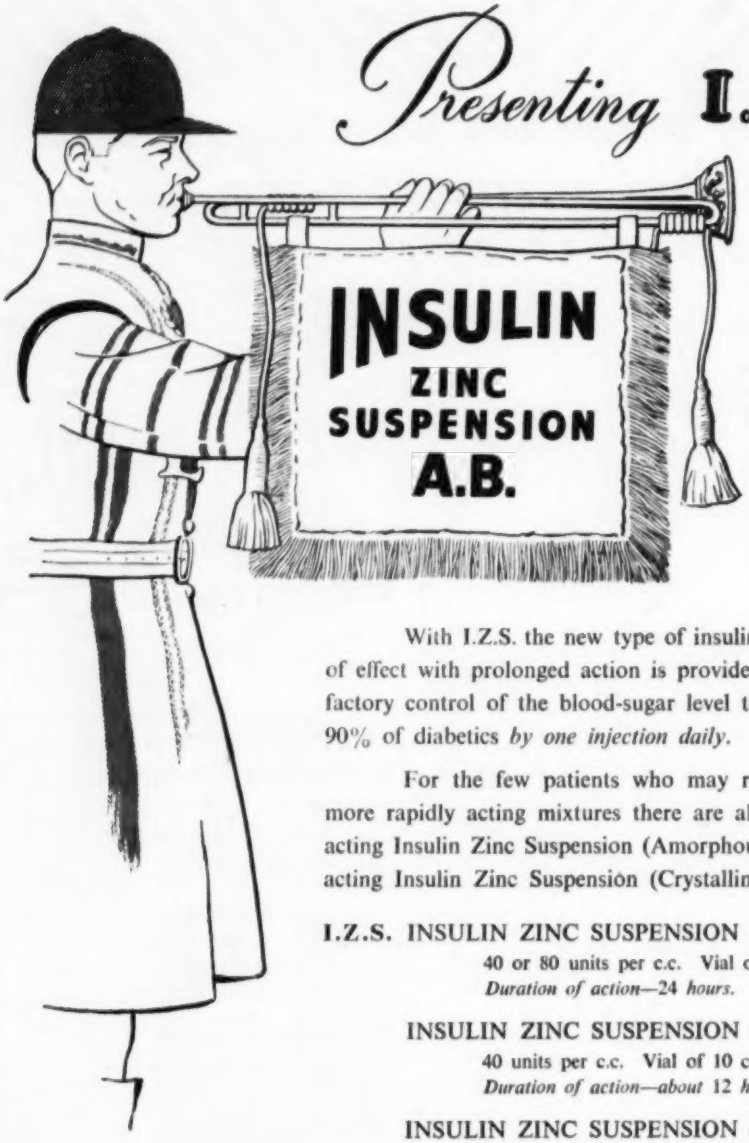

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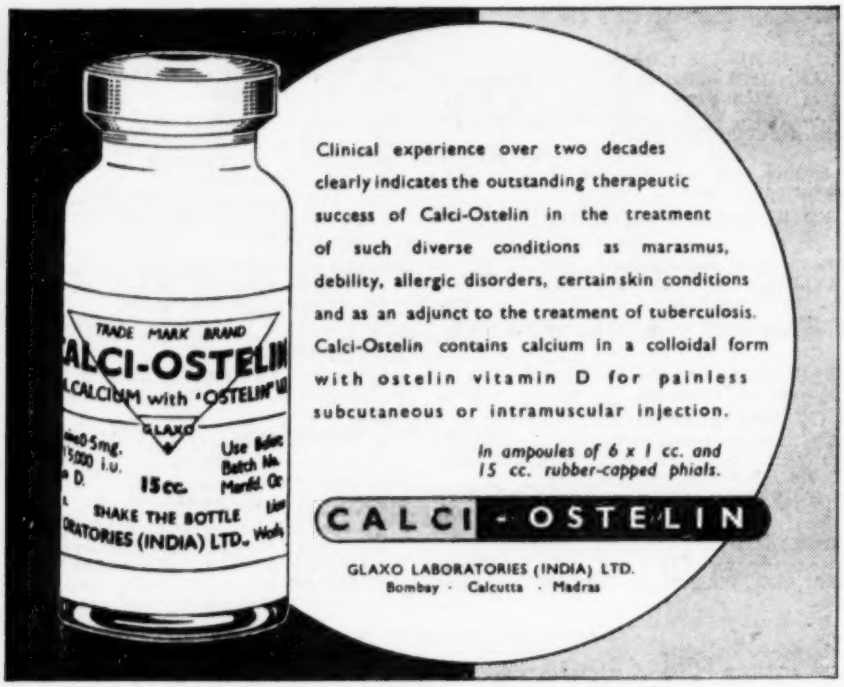
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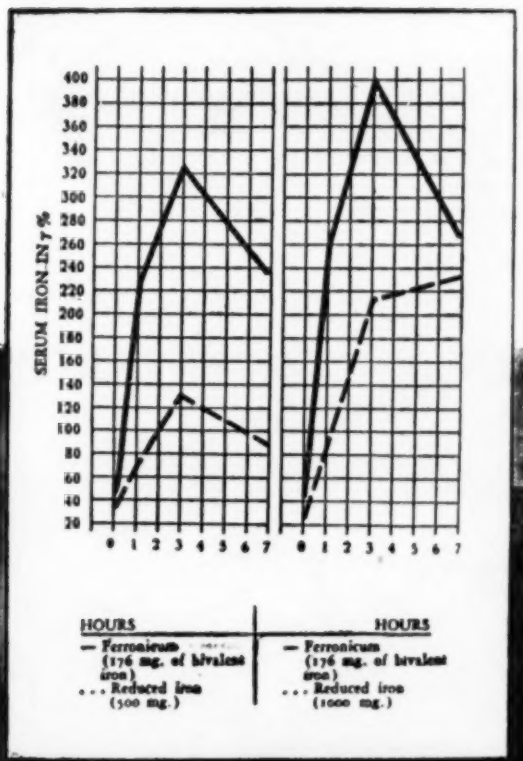

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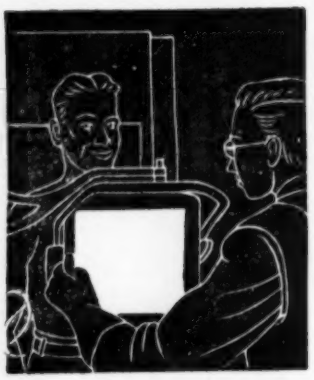

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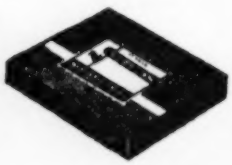

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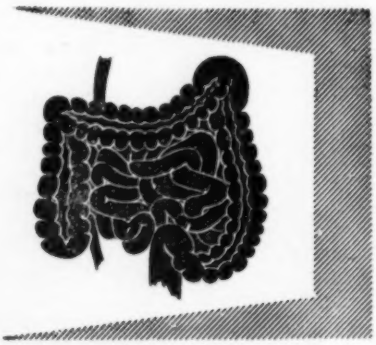

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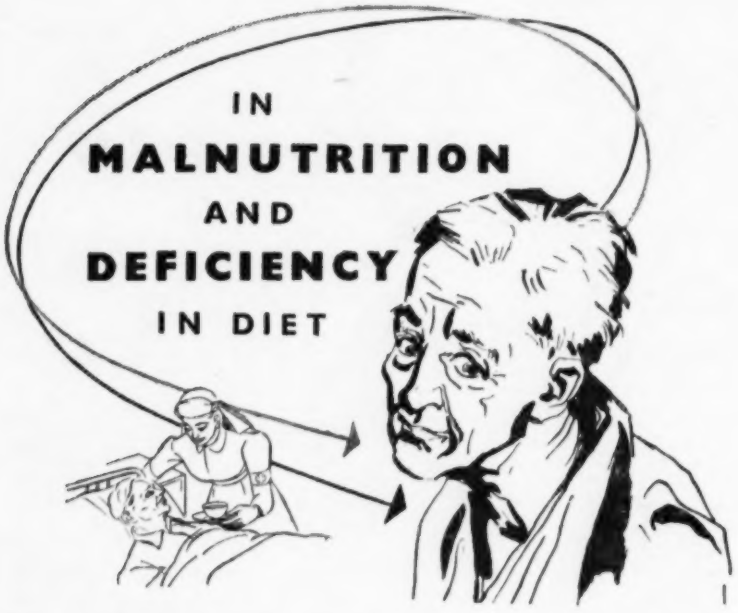

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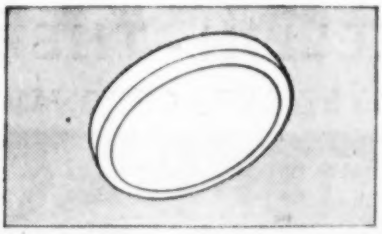

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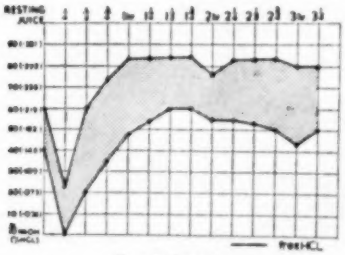
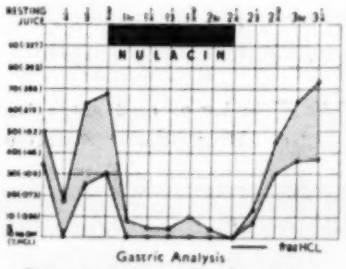


Gastric Analysis

Superimposed gruel fractional test meal curves of five cases of duodenal ulcer.



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British Medical Journal, 180-182, 26th July, 1952

Medical Press, 195-199, 27th Feb., 1952

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1. Valentine, F. C. O.: *LANCET* **1**:981 (AUG. 22) 1953.
2. Reiss, F.: *NEW YORK STATE J. MED.* **53**:1051 (APR. 15) 1953.

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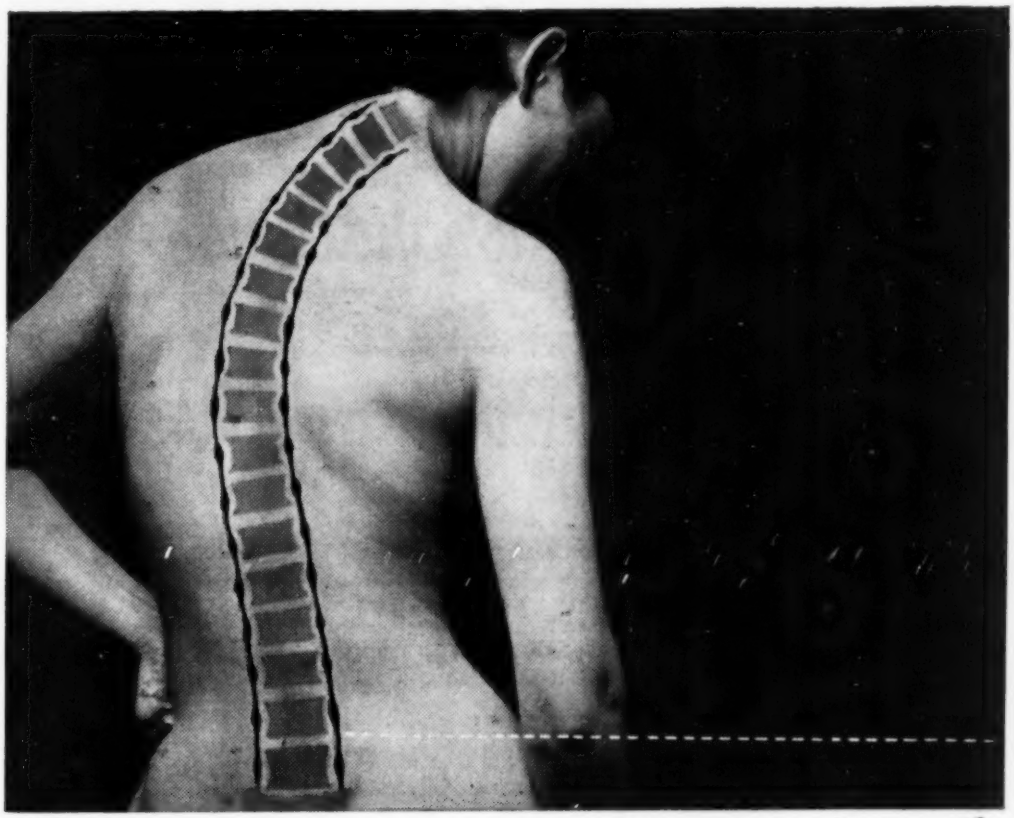

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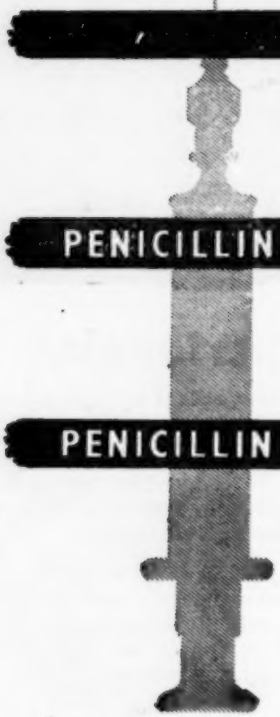

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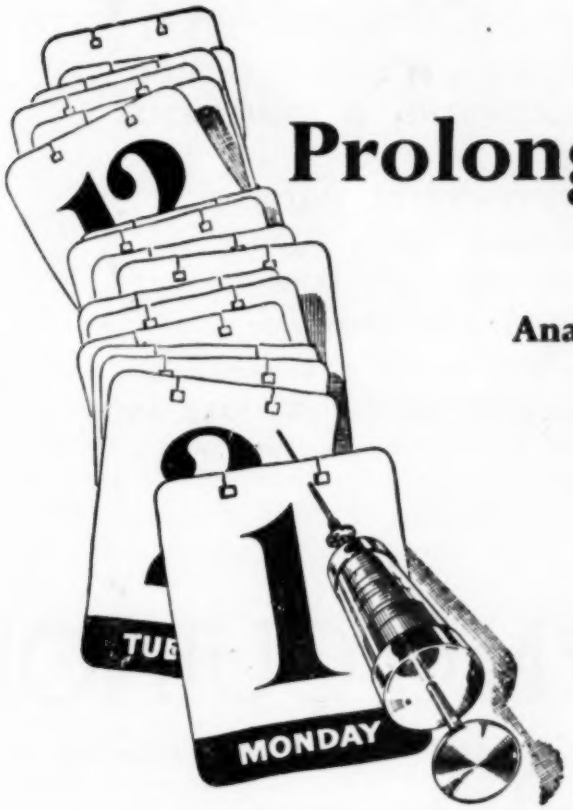

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Journal of the Indian Medical Association

VOL. XXIII, No. 6 CALCUTTA MARCH, 1954

ORIGINAL ARTICLES

SARCOIDOSIS—AN AUTOPSY STUDY OF TWO CASES

D. J. REDDY, M.D.,

Professor of Forensic Medicine,
Andhra Medical College, Visakhapatnam

Sarcoid is the subject of innumerable articles and several valuable monographs. The most exhaustive, instructive and recent of these is the review and report of investigation of one hundred and sixty cases including thirty necropsies by Longcope and Frieman (1952). Sarcoid masqueraded under a variety of names and Riley (1950) lists 19 synonyms for this disease. It is a disease of protean nature which attracted the physicians in different specialities from time to time. The disease is characterised by the presence of rounded circumscribed, discrete masses, either visible or only disclosed at routine histological examination of tissues. The lesions although they bear a similarity to tuberculosis are yet distinct by the absence of caseation necrosis and tubercle bacilli. The sharpness of outline of the lesion is characteristic and usually is lacking in a tubercle. Hyalinosis and fibrosis are often observed as the age of the lesion advances. Asteroid, Schaumann and non-lipid crystal giant cell inclusion bodies are often reported, although they do occur in other types of granulomata.

The aetiology of sarcoid is yet obscure. According to clinical and pathological reports practically every organ and tissue have been involved by sarcoid. Schaumann (1917) in 1914 in his prize essay laid emphasis on the systemic nature of the disease. Focal sarcoids involving a single organ like spleen are occasionally encountered. There is commonly an astonishing absence of symptoms. The combination of widespread lesions and absence of constitutional symptoms is highly suggestive of sarcoid. Roentgenological evidence of discrete lesions scattered widely through both lungs found in patients with no clinical suggestion of pulmonary disease is a common feature of sarcoid.

Sarcoid in the majority of cases was for the first time spotted at routine histological study of autopsy material. Often it is an incidental finding at autopsy in violent, accidental or suicidal deaths and rarely it is the immediate cause of death.

Jonathan Hutchinson (1898) is credited with the first description of sarcoidosis in 1875. He named it 'Mortimer's malady' in remembrance of his patient Mortimer. 14 years later Besiner (1899) gave a detailed description of cutaneous lesions. In 1899 Caesar Boeck (1899) recorded the pathological histology of the granulomatous lesion as observed in the skin lesions and described associated lymphadenopathy. He proposed the term "sarcoid" for he believed the histological picture resembled the small cells of sarcoma. Ten years later Heerfordt (1909) reported uveoparotid fever and cranial nerve palsies due to sarcoidosis. Schaumann (*loc. cit.*) in 1914 described the necropsy findings observed by him in a patient with sarcoidosis.

Freiman (1948) in a masterly review of the literature on sarcoid reckoned that there were well over 1000 cases of this disease and related syndromes on record. He opined that it is much more common than is believed. The greatest number of cases occurs in the third and fourth decades of life. No race appears to be immune, but in U.S.A. greater incidence of sarcoid is recorded in the dark skinned persons. In the exhaustive account on sarcoid recorded by Longcope and Freimann a detailed global incidence of this disease is found, but information regarding the epidemiology of the disease in India and the close-by countries in South East Asia is wanting. In 1930-1951 Quarterly Cumulative Index Medicus no record of reports on sarcoid in India is found. Periodical perusal of medical literature from 1952 to date gave no clue to any report on sarcoid in India. Dr. D. Govinda Reddy did not encounter sarcoid lesion in biopsy or necropsy material from the pathology department of medical college, Madras, examined by him since 1940, (Personal communication). In the personally reviewed 1650 necropsy reports of the pathology department of Andhra Medical College , no record of sarcoid lesion was found. A large disfiguring granulomatous lesion of the left eyelid in a male aged about 25 years with typical histological

appearances of sarcoid was presented to the clinical society of the Andhra Medical College and King George Hospital in September 1952 from Dr. S. N. Gantayat's unit. I suggested then further investigation to find out any fungal or helminthic causal factors. Cutaneous sarcoid of the face in a male aged about 20 years referred to me recently by Dr. M. V. Krishnamurthy is under study. The rarity of published reports or none at all on sarcoidosis in this country is sufficient reason for recording the necropsy findings of two cases. By a fortuitous coincidence they happened to be consecutive medicolegal autopsies. This report of these findings may help the clinicians and pathologists to bear in mind sarcoid and to be on the look out for it.

MATERIAL AND METHODS

Routine histological study of tissues obtained from medicolegal necropsy material is done since 1949. Sections stained by Ziehl-Neelsen method were screened to eliminate or confirm a suspected tubercular lesion. In the absence of tubercle bacilli fresh sections stained by Foot's method were examined to detect reticulum net work. The finding of an intact reticulum net work in a granulomatous lesion is a point in favour of sarcoid. Any suspected amyloid change in the tissues examined was tested for metachromasia. This study revealed sarcoid lesions in two necropsy materials.

Case 1—T. M., a male aged about 60 years was admitted in the E.N.T. ward, King George Hospital on 23-3-53 for a selfinflicted cutthroat wound. The patient expired on 15-4-53.

Chief necropsy findings inclusive of morbid histology. (P.M. No. 226):

Axillary and groin lymph nodes were palpable, firm and sectioned surface showed no areas of softening.

LUNGS: Both the lungs were in places adherent to the parietal pleura. The right lung weighed 870 g. while the left weighed 650 g. Both were less crepitant than the normal. Study of histological section of a nodule of the lung (split pea in size) disclosed marked interstitial fibrosis. Multiple discrete granulomatous lesions totally devoid of caseation were located in between alveoli. The epithelioid cells formed whorls around a central capillary. None of these lesions were bordered by a peripheral cuff of lymphocytes. These appeared to be infant lesions of sarcoid (Fig. 1, *vide* Plate).

LIVER: The liver weighed 1050 g. Cut surface was smooth. Histological study of the sections of liver revealed multiple round or ovoid circumscribed granulomatous lesions with single or multiple giant cells containing innumerable nuclei, totally devoid of caseation (Fig. 2, *vide* Plate). Threads of collagen were seen in the centre of each lesion. Study of sections stained by Foot's method revealed intact reticulum net work. The granulomata were characteristically located adjacent to the portal tracts. The sharpness of outline of the lesions was significant. Collagenisation and fibrosis were observed in some of them, indicating advancing age of the lesion.

SPLEEN: The spleen weighed 100 gms. Pulp of the sectioned surface was soft. Histological sections showed multiple discrete epithelioid cell systems with giant cells and no necrosis. Threads of collagen were seen in the centre of each lesion. Sections stained by Foot's method disclosed intact reticulum network in each one of the sarcoid lesion. Periarterial hyalinosis of arterioles in the trabeculae and Malpighian corpuscles simulated the appearances of amyloid and exhibited metachromasia with methyl violet staining (paraamyloid).

In one of the giant cells ovoid refractile twin inclusion bodies, facing opposite to each other, enclosing bluish chromatin like granules were seen (Fig. 3, *vide* Plate).

Gross and histological appearances of heart, kidneys, intestines and brain were unremarkable.

Case 2—A. P. a male aged about 50 years was admitted in one of the surgical wards of King George Hospital at 7 a.m. on 18-4-53, for wounds sustained in a railway accident. Fracture of both leg bones noticed. The patient expired 2½ hours after admission.

CHIEF AUTOPSY FINDINGS INCLUSIVE OF MORBID HISTOLOGY (P. M. No. 227): Histological study of the lungs, liver, brain and heart revealed nothing remarkable. Interstitial fibrosis of the pancreas was observed. The small intestine contained 2 roundworms.

SPLEEN: The spleen weighed 240 g. The capsule was wrinkled. Sectioned surface of the preserved portion of the spleen presented discrete, rounded, circumscribed, firm nodules of varying sizes (Fig. 4, *vide* Plate). Each one of them was composed of epithelioid cells, fibroblasts and a few giant cells. Eosinophils were present in moderate numbers. There was no caseation. The sharp outline of the granulomata (both gross and microscopic) was remarkable. Non-lipid crystal inclusion bodies were seen in the giant cell (Fig. 5, *vide* Plate). Similar non-lipid crystals and needle like calcium deposits were observed in the matrix close to the giant cell (Fig. 6, *vide* Plate).

Screening of multiple sections of the lungs, liver and spleen stained by Ziehl-Neelsen method in both cases disclosed no tubercle bacilli. Similar scrutiny of controlled sections from suspected tuberculous lesions from multiple organs (miliary or otherwise) revealed innumerable tubercle bacilli.

Morbid anatomical diagnosis: 'Sarcoids of spleen'.

DISCUSSION

The granulomatous lesions observed in the lungs, liver and spleen in both the cases were discrete, circumscribed and at no place a fusion of these nodules into a conglomerate was observed. The interstitial and interalveolar location of these granulomata in the close proximity to a vessel in the lung and their periportal distribution in the liver observed in the necropsy material obtained from Case 1 are highly characteristic of sarcoid. According to Nickerson (1937) the above two findings are never encountered in tuberculous lesions and are significant of sarcoid. Absence of tubercle bacilli in multiple sections screened and caseation and the presence of an intact reticulum network and collagen deposition in these lesions bear unequivocal evidence in favour of sarcoid. Ricker and Clark's (1949) review of 300 cases of sarcoid including 22 necropsies was based on material selected on histological structure and they stressed the discrete nature of epithelioid granulomata and its virtue to preserve individual outlines at all stages of development. The sarcoid lesions

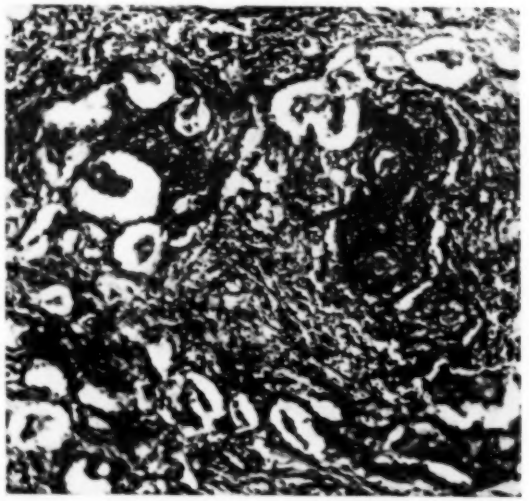

Fig. 1 (Case 1)—Illustrates a sarcoid lesion of the lung. Epithelioid cells forming a whorl around a capillary is seen. (H & E × 60)

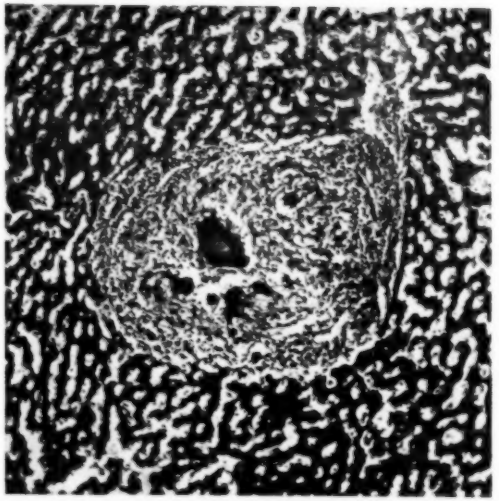

Fig. 2 (Case 1)—Illustrates circumscribed sarcoid lesion in the liver. No caseation is seen. A large giant cell with many nuclei is seen. (H & E × 60)

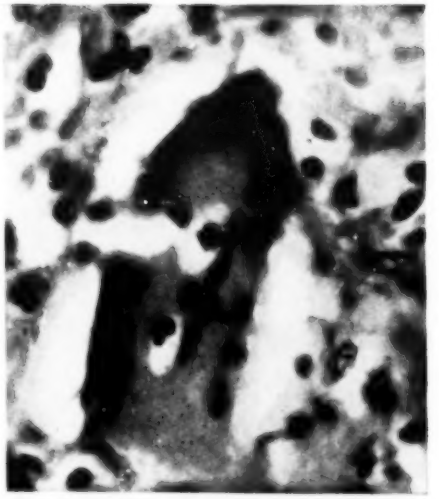

Fig. 3 (Case 1)—Twin refractile giant cell inclusion bodies in spleen showing fragments of chromatin like material. (H & E × 840)

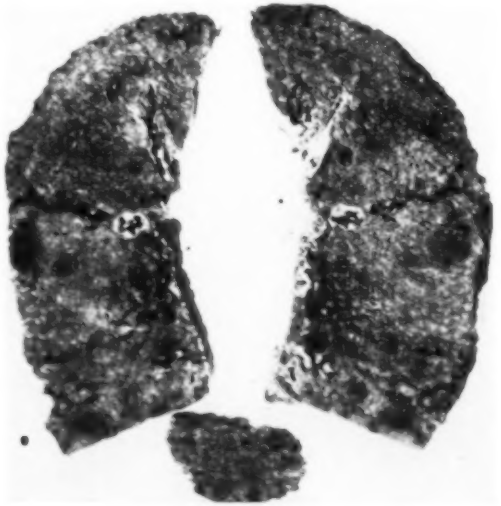

Fig. 4 (Case 2)—Shows multiple sarcoid nodules of varying sizes. The sharpness in outline of each is well seen.

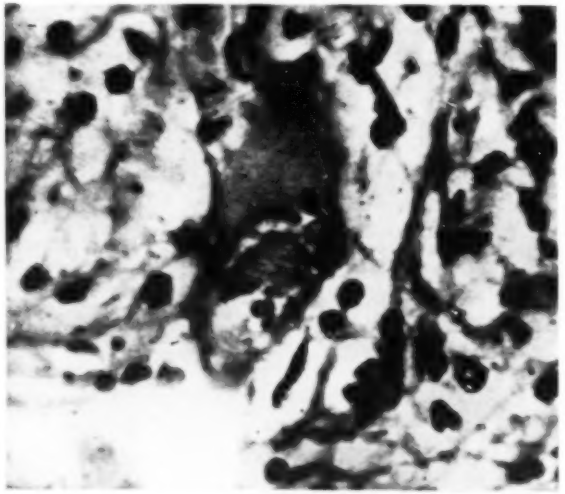

Fig. 5 (Case 2)—Shows nonlipid crystal inclusion bodies in the giant cell in sarcoid lesion of spleen. (H & E × 840)

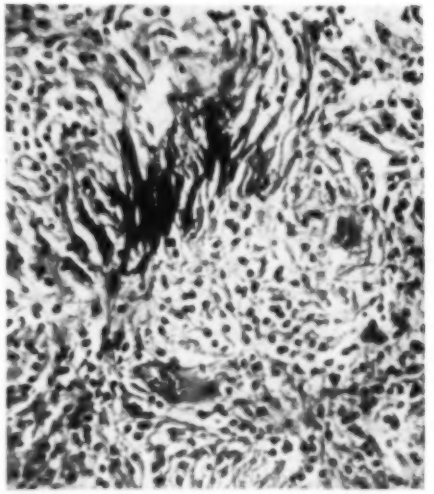

Fig. 6 (Case 2)—Shows calcific threads, nonlipid crystals and fibroblasts in the matrix of the sarcoid lesion of spleen. (H & E × 120)

Fig. 4A (C. G.)—Before treatment of acne vulgaris.

Fig. 4B (C. G.)—After treatment. (Hardly any scar could be seen).

Fig. 5A (H. L.)—Before treatment of acne vulgaris.

Fig. 5B (H. L.)—After treatment (showing scars).

Fig. 6A (G. T.)—Before treatment of acne (cystic type).

Fig. 6B (G. T.)—After treatment (showing scars).

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observed in the necropsy material by me are true to the descriptions of Ricker and Clark (*loc. cit.*) It was unfortunate that material was not available for cultural study, for in Case 1 the nature of the lesion was not disclosed till a histological study of the tissues was made as the organs by then were fixed in formalin and in Case 2 it is regretted that my colleague who performed the autopsy overlooked the nodules in spleen and so deprived the benefit of a cultural study of the material.

In both the cases the sarcoid nature of the lesions was incidental autopsy findings and was never the immediate cause of death. Case 1 exemplifies the systemic and disseminate form of the disease. The histologic pattern of the lesions in spleen and liver in Case 1 is distinct of sarcoid although it bears gross similarity to miliary tuberculosis.

The sarcoid lesions observed in the liver and spleen of deceased (T.M.) were far more advanced than those of the lungs. This finding rather weakens tubercle as the aetiological factor of sarcoid and strengthens the view that it may be a manifestation of a hypersensitive state. It is a point strongly against the lesions in the deceased being the result of miliary tuberculosis for the observation of infant lesions in the lungs and older ones in the liver and spleen is not consistent with the usual evolution of miliary tuberculosis.

Sarcoid lesions in the deceased (A.P.) were limited to the spleen. The spleen is recognised as the second commonest site of lesions of generalised sarcoidosis. Sarcoid nodules of the spleen are often mistaken for so called primary tuberculosis and Boyd's (1950) book on pathology of internal diseases contains an illustration of sarcoid spleen—the specimen of which is still in Manitoma Pathology Museum. It was twenty years ago labelled as tuberculosis and now recognised as sarcoidosis. Sarcoids of the spleen may remain asymptomatic. Slight to moderate and occasionally massive enlargements of the spleen in sarcoids are reported. A slightly enlarged spleen may be the site of extensive sarcoid lesions. Partenheimer and Meredith (1950) reported sarcoid splenomegaly with hypersplenism and amelioration of symptoms by splenectomy. James and Wilson (1945-46) described a case of sarcoidosis with spontaneous rupture of the spleen. The moderate number of eosinophils observed in the sections of spleen examined are not unusual to sarcoid lesions for Nickerson (*loc. cit.*) and Jaques (1953) have found them in and about the granulomata.

Giant cell inclusion bodies were observed in sections of the spleen in both the cases. The nature of the twin refractile ovoid inclusion bodies enclosing chromatinlike dots is obscure and a previous record of these are wanting. The non-lipid crystal inclusion bodies are similar to those reported by Engle and Ralph (1953). The finding of similar crystals in the extra giant cell matrix discredits the former with any significance. The giant cell inclusion bodies observed above and the asteroid and Schaumann bodies aid in the recognition of sarcoid, although by themselves they are not diagnostic.

A national survey on sarcoidosis is suggested with a view to prove or disprove the thought-provoking statement made by Jaques that generalised sarcoidosis and nematode infestations are similar in epidemiology, laboratory findings, organs involved and histologic reactions. For it is believed that sarcoidosis results from an altered capacity of the host to react to various as yet unidentified antigenic substances, one of which may result from nematode infestations.

Summary

1. The literature regarding some aspects of sarcoidosis is briefly reviewed.

2. Necropsy findings in two cases of sarcoidosis are reported. The characteristic histological pattern of sarcoid lesions observed is detailed.

3. The sarcoid lesions in the lungs are in earlier stages of evolution than those observed in the liver and spleen. On the basis of this it is suggested that sarcoid may be a manifestation of hypersensitive state.

4. Twin refractile and non-lipid crystal giant cell inclusion bodies are described.

5. A national survey on sarcoidosis with a view to disclose causal factors is suggested.

Acknowledgment—I am grateful to Dr. M. Ramasubbarao, M.B.B.S., for his kind help. The help rendered by the photo-artists Edwin and his son is acknowledged with pleasure.

References

Besnier, E.—*Ann. dermat. et. syph.*, **10**: 333, 1899.

Boeck, C. J.—*Cutaneous & genito-urin. Dis.* **17**: 543, 1899.

Boyd, W.—Pathology of Internal Diseases. 5th Ed. 1950. pp. 625-26. Lea & Febiger. Philadelphia.

Engle, J. R. and Ralph, L.—*Am J. Path.*, **24**: 53, 1953.

Freidman, M.—*Am. J. Path.*, **20**: 621, 1944.

Freiman, D. G.—*New England J. Med.*, **239**: 664, 1948.

Heerfordt, C. F.—*Arch. Ophth.*, **70**: 254, 1909.

Hutchinson, J.—*Arch. Surg., Lond.*, **8**: 307, 1898.

James and Wilson, A. J.—*Brit. J. Surg.*, **33**: 280, 1945-46.

Jaques, Williams, E.—*A. M. A. Arch. Path.*, **53**: 558-92, 1952.

Longcope, Warfield and Freiman, David, G.—*Medicine*, **31**: 1-132, 1952.

Nickerson, D. A.—*Arch. Path.*, **24**: 19, 1937.

Partenheimer, R. C. and Meredith, H. C.—*New Eng. J. Med.*, **243**: 810, 1950.

Ricker, W. and Clark, M.—*Am. J. Clin. Path.*, **19**: 725-50, 1949.

Riley, E. A.—*Am. Rev. Tuberc.*, **62**: 231, 1950.

Schaumann, J.—*Ann. dermat. et. syph.*, **6**: 357, 1917.

SURGERY IN THE TREATMENT OF ABDOMINAL TUBERCULOSIS

S. C. MISRA, L.R.C.P., F.R.C.S.(ENG.),

Professor and Head of the Department of Surgery, K. G. Medical College, Lucknow

AND

S. S. PATHAK, M.B.B.S.

It is a pity that surgery has not been brought to the aid of sufferers of abdominal tuberculosis to the extent it should be. A large number of physicians do not have the opportunity to see the remarkable benefit which occurs to this group of cases. The number of cases of abdominal tuberculosis is fairly large. During the last three years the senior author (S.C.M.) has made with the help and collaboration of his colleagues, a study of representative group of tubercular abdomen and the following remarks are the result of experience gained from this study.

Cases of tubercular abdomen can be divided into two major groups:

1. Those which show an active lung lesion and which overshadows the entire picture.

2. A group where either lung lesion is absent or in the opinion of the physician it is quiescent and, therefore, not playing an active role in the pathology of the patient.

This second group can be further subdivided into four subgroups:

(a) In which ascites is the prominent feature.

(b) In which generalised tubercular lesion forming lump and masses is a prominent feature.

(c) In which large and caseous glands in the mesentery are a prominent feature.

(d) In which stricture formation with its associated pathology is the prominent feature.

It is true that in many cases more than one combination is present, yet as has been pointed out, one of them is the predominating feature. We had an occasion here to study many cases and it is surprising that of this a very large number falls into the last subgroup.

This subgroup is very interesting and much more so from histopathological standpoint. A study of this group of cases which very closely resembles Crohn's disease (chronic enterocolitis or cicatrizing enteritis) has been the subject of a separate study and the results will be published very soon. Suffice it to say that though in many of these cases the naked eye appearance and histopathological study may tempt one to isolate them into a separate group better described as Crohn's type of lesion, yet this detailed study extending over a period of three years, in which one has the opportunity to closely observe a large number of cases of both these groups and study their histopathology and animal inoculation results, leads one to the impression and belief that clinicians would be well advised to deal with them as a variant of abdominal tuberculosis.

With the advent of various chemotherapeutic groups of drugs which have special value in the treatment of tuberculosis in general, it is very necessary that these cases should be given full course of treatment with them. This point is very well borne out by Case 1. At the first operation his abdomen was found to be full of tubercular lesion; after four months' intensive treatment, when his abdomen was opened on 20th July 1953, 95 per cent of the disease had disappeared. To the mind of the authors nothing could be more convincing of the efficacy of these drugs.

In the present study it had not been possible to test the efficacy of the various combinations of drugs at present being tried. In the majority of cases we have usually availed of only one combination and the results are quite effective. This combination is satisfactory from the point of view of economy in that the need of injections is avoided and thus skilled attendance is not necessary. The combination used is as follows:

Para-amino salicylic acid and isonicotinic acid hydrazide (Tibizide).

P.A.S.—1 g. Q.I.D., Tibizide 50 or 100 mg. B.D. for 1-3 months.

Streptomycin in ½ g. B.D. dose is always given for 48 hours before operation and usually continued for 7-10 days after operation.

It is our conclusion that when a case of abdominal tuberculosis, with no active focus in other organs, does not put on weight and progress satisfactorily there is in that case an element of obstruction in the small bowel or ileocaecal junction which is the main handicap. When one has the opportunity to see the rapid improvement which ensues when short circuiting is done in such a case, then only one realises the very great importance of this surgical procedure and the great contribution it can make towards the successful management of a case of tubercular abdomen.

A few illustrative cases are given which show the remarkable benefit derived from the various operative procedures. In all the cases there was a marked improvement in general health, subsidence of temperature and well marked increase in weight.

In some of the cases of group (d) the improvement after the first stage of operation is so remarkable that one may be tempted to leave the case alone. But it is our conviction that one must complete the second stage and remove the lesion if one wants to ensure permanent benefit.

This point has been driven home to us on many occasions when the case was opened at the second stage. This is well exemplified in Case 2 (Figs. 1 and 2).

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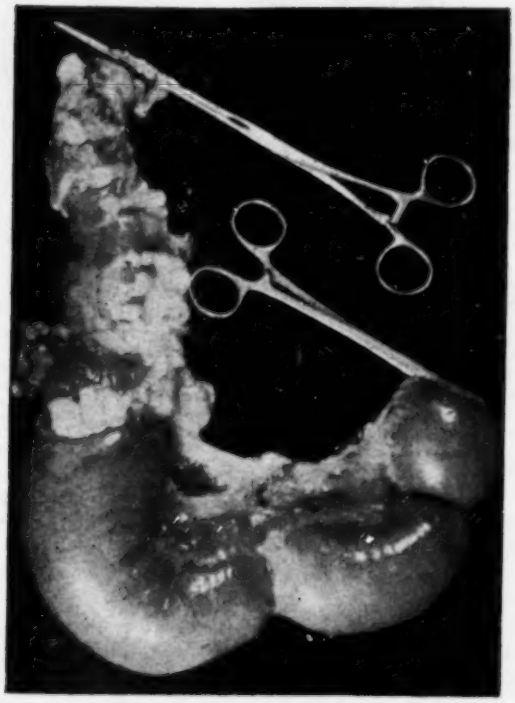


FIG. 1 (CASE 2)

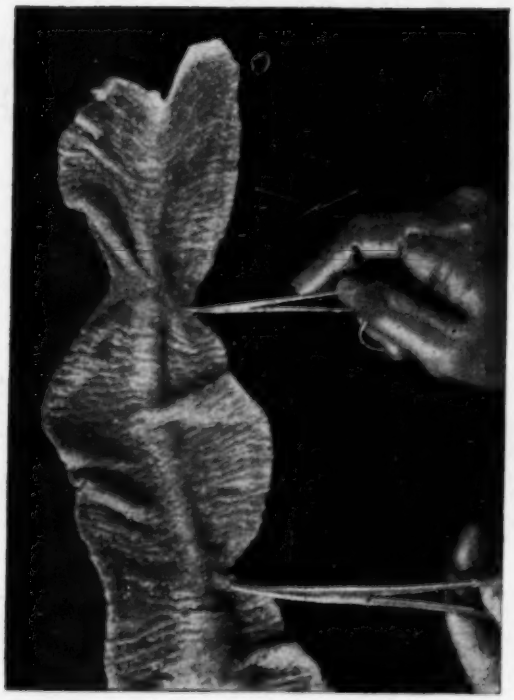


FIG. 2 (CASE 2)

We have also followed some cases operated by others who have done only one stage and found that after some time they relapsed.

The illustrative cases are representative of the severe type of cases and that is why in many it was necessary to adopt a two-stage procedure.

SHORT SUMMARY OF CASES

Case 1—M.S., 24 years, middle class, admitted on 3-11-52. Operated on 18-11-52. Discharged on 5-4-53.

SYMPTOMS—Pain in abdomen—4 months; loss of weight —4 months; fever (98°-100°-101°F.)—10 days.

X-RAY LUNGS—Normal.

OPERATIVE FINDINGS—Small quantity of peritoneal fluid; a large group of caseating lymph glands in the mesentery was found and one kidney tray of pus (about 150 c.c.) was aspirated. Intestines were studded with tubercles.

PUS CULTURE—Positive for acid-fast bacilli.

RESULT OF TREATMENT—Increase in weight: 8-1-53—119 lbs., 5-4-53—136 lbs. Temperature came down to normal 10 days after operation.

DRUGS—Tibizide 18,600 mg. P.A.S. 240 g.

The patient returned for follow-up on 4-7-53. His weight was 127½ lbs., two lumps were palpable and he complained of pain in abdomen. He wanted to be operated again to see if he could be made completely fit.

He was opened on 20th July 1953 and it was surprising to find that 95 per cent of his lesion had disappeared. The two lumps palpable were two caseous softened glands and they were removed. Three other moderate-sized glands were found caseous. They were incised, excavated, scraped and closed.

Case 2—Mrs. V. W., 21 years, upper middle class. Date of transfer from medical side 12-12-52. Date of operation 19-1-53. Date of discharge 10-4-53.

SYMPTOMS—Lump abdomen—4 months; fever (99-100°F.) —4 months; loss of appetite 4 months.

LUNGS—Active lesion in the left middle zone, suspicious of a cavity and after treatment on the medical side the lung showed marked fibrosis in the left middle zone indicative of healed lesion.

OPERATIVE FINDINGS—No free fluid in the peritoneal cavity. Tubercles all over the surface of the mesentery and the bowel were found. Lymph glands in the mesentery were enlarged and caseating. Three strictures in the terminal 2½ inches of the ileum with skip areas were found (Fig. 3). Lateral ileo-transverse colostomy short circuiting the strictures was done. (Fig. 4).

HISTOPATHOLOGY—Tubercular granulation tissue.

RESULT OF TREATMENT—(Medical side before transfer).

On medical side treatment for 3½ months with streptomycin, P.A.S. and tibizide therapy showed improvement in the lung lesion and the temperature came down to normal. But there was no satisfactory improvement in general health and no increase in weight and no diminution in the size of the lump.

Weight: 2-9-52—62 lbs.; 19-1-53—62 lbs.; 3-4-53 (after operation)—85½ lbs. This demonstrates the rapid marked increase in weight which occurs when the obstruction is removed.

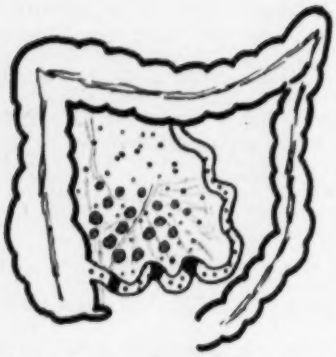


FIG. 3 (CASE 2)—OPERATIVE FINDINGS OF THE EXTENT OF LESION

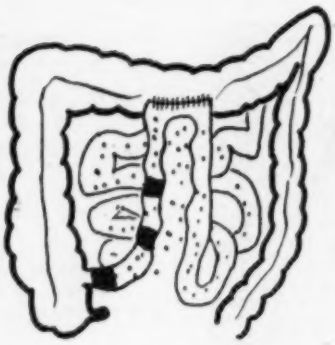


FIG. 4 (CASE 2)—FIRST STAGE PROCEDURE

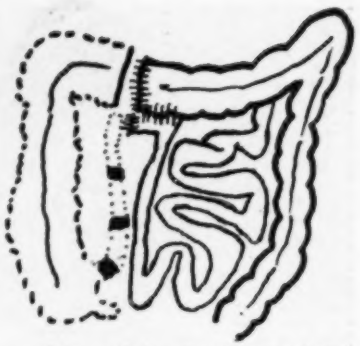


FIG. 5 (CASE 2)—SECOND STAGE PROCEDURE

DRUGS—Streptomycin 12 g., P.A.S. 525 g., Tibizide 10,760 mg.

She was readmitted on 22-7-53 for the second stage. The clinical improvement was remarkable and no lump was felt in the abdomen. Her weight had increased to 97 lbs. On operation the ileocaecal lesion and the strictures could be detected and so hemicolectomy and excision of the diseased area were done (Fig. 5). On examination of the opened specimen still active lesion could be seen (Figs. 1 and 2).

Case 3—Miss P. N., 16 years, middle class. Transferred from medical side 13-2-53. Date of operation 30-3-53. Date of discharge 30-4-53.

SYMPTOMS—Pain in abdomen 5 years; loss of weight 2 months; fever 2 months.

LUNGS—Showed infiltration in the left middle zone suspicious of a cavity. Physician felt that lung lesion was quiescent but she was not showing any progress.

DRUGS—Streptomycin 34·5 g., P.A.S. 264 g., Tibizide 1,650 mg.

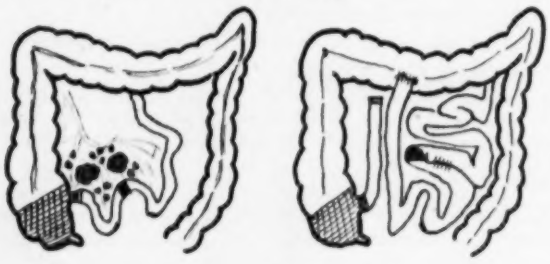
She is waiting for her second stage.

Case 4—A.B., 18 years, poor class. Date of transfer from medical side 28-1-53. Date of operation 9-2-53. Date of discharge 9-4-53.

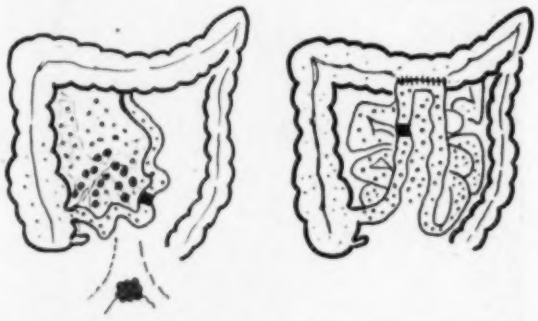
SYMPTOMS—Pain in abdomen 6 months; constipation 6 months; fever (98°-101°F.) 6 months.

LUNGS—Lung fields showed increased fibrosis and basal congestion and the left base showed signs of old resolving pleural involvement.

OPERATIVE FINDINGS—Free fluid in peritoneum about 1 pint. Very well marked large tubercles over the mesentery and bowel. A stricture 8" proximal to the ileocaecal valve. A group of caseating lymph glands at the bifurcation of aorta (Fig. 8). Because of her low condition only lateral



FIGS. 6 AND 7 (CASE 3)
EXTENT OF THE LESION (FIG. 6) AND SIDE TO SIDE ANASTOMOSIS OF THE SMALL BOWEL, SHORT CIRCUITING THE STRICTURE AND TERMINAL ILEOTRANSVERSE COLOSTOMY (FIG. 7)



FIGS. 8 AND 9 (CASE 4)
EXTENT OF THE LESION (FIG. 8) AND LATERAL ILEOTRANSVERSE COLOSTOMY (FIG. 9)

OPERATIVE FINDINGS—Ileocaecal area involved. Stricture 13" proximal to the ileocaecal valve. Glands in the mesentery large and caseating. Proximal and distal to ileal stricture (Fig. 6) anastomosis of small bowel, with ileotransverse colostomy (end to side anastomosis) was done. This procedure enabled us preserve about 9" more of ileum (Fig. 7).

HISTOPATHOLOGY OF GLAND REMOVED—Tubercular lymph adenitis.

RESULT OF TREATMENT—Weight: 30-3-53—72 lbs.; 26-4-53—81 lbs.

ileotransverse colostomy shortcircuiting the stricture was done (Fig. 9).

HISTOPATHOLOGY—Tubercular granulation tissue.

TREATMENT—On medical side (before transfer). She had been getting attacks of intestinal obstruction and was treated conservatively. She had little pleural effusion in the left C.D. angle which was resolving with streptomycin therapy but no improvement in general health and weight.

RESULT OF OPERATION—Weight 9-2-53—57 lbs.; 5-4-53—76½ lbs.

DRUGS—Streptomycin 18 g., P.A.S. 232 g., Tibizide 4·575 mg.

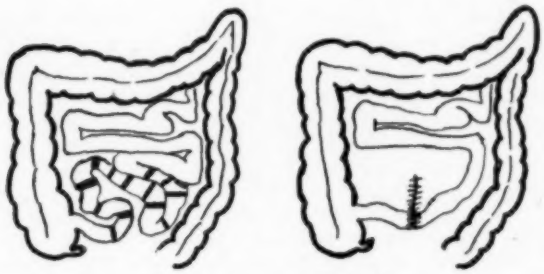
She is also waiting for her second stage operation.

Case 5—Mrs. P. N., 20 years, female, upper middle class. Date of admission 17-11-52. Date of operation 1-12-52. Date of discharge 14-1-53.

SYMPTOMS—Pain in abdomen 1½ years; vomiting and diarrhoea 2 months; visible peristalsis; temperature—nil.

CHEST—Hilar shadows increased with generalised congestive signs.

OPERATIVE FINDINGS—13 (thirteen) strictures in ileum extending from 8" from ileocaecal junction to 64 inches from



FIGS. 10 AND 11 (CASE 5)
EXTENT OF THE LESION (FIG. 10) AND APPEARANCE AFTER PERIPHERAL EXCISION OF THE PART OF THE ILEUM INVOLVED AND END TO END ANASTOMOSIS

the junction. No fluid in abdomen. Terminal ileum and caecum free (Fig. 10). A peripheral excision of the bowel and end-to-end anastomosis were done (Fig. 11).

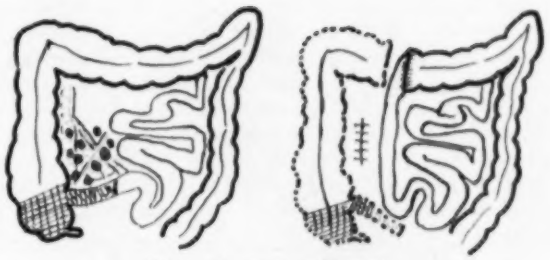
RESULT—Weight: 30-11-52—70 lbs.; 8-1-53—74 lbs.; 14-1-53—76 lbs.

DRUGS—P.A.S. nil; Tibizide nil; Streptomycin 11 g.

Case 6—S., 20 years, female, poor. Date of admission 13-1-52. Date of operation 29-1-52. Date of discharge 12-2-52.

SYMPTOMS—Attacks of pain in abdomen—3 years; lump; temperature.

LUNGS—Nil.



FIGS. 12 AND 13 (CASE 6)
SHOWING THE EXTENT OF THE LESION (FIG. 12) AND RIGHT HEMICOLECTOMY DONE (FIG. 13).

OPERATIVE FINDINGS—Lesion in the lower part of terminal ileum and caecum. Glands draining the area much enlarged (Fig. 12). Right hemicolectomy including the glands was done (Fig. 13).

RESULT—Weight: 15-1-52—100 lbs.; 20-8-52—114 lbs.; 12-7-53—140 lbs. Now the patient is free from all symptoms and very much improved.

Case 7—R. K., 40 years, lower middle class. Transferred from medical side 7-9-51. 1st Stage: Operated on 22-9-51. Discharged on 17-10-51. 2nd Stage: Admitted on 7-4-52. Operated on 22-4-52. Discharged on 15-5-52.

SYMPTOMS—Heaviness in abdomen 11 years; attacks of fever with rigor 11 years; mass in right iliac fossa 11 years.

CHEST—Extensive fibrosis. Stray calcified glands.

OPERATIVE FINDINGS AND PROCEDURE ADOPTED—Lesion localised to the terminal ileum and caecum. Large glands along ileocolic vessels (Fig. 14). 1st stage: ileotransverse colostomy (end-to-end anastomosis) (Fig. 15). 2nd stage: right hemicolectomy done (Fig. 16).

RESULT OF TREATMENT—Weight: 7-9-52—82 lbs.; 15-5-53—132 lbs.

MEDICINE USED—Dihydrostreptomycin 47+24 g.=71 g.; P.A.S. nil; Tibizide nil.

SURGICAL PROCEDURES USED

The exact surgical procedure which should be adopted requires careful consideration at the operation table. When the lesion is confined to ileocaecal region or immediate neighbourhood the best results are ob-

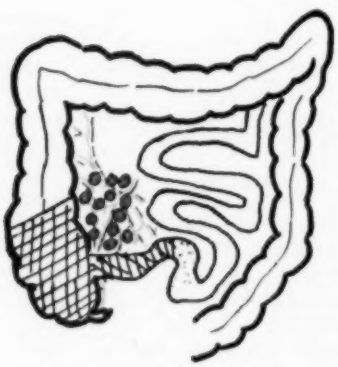


FIG. 14 (CASE 7)—SHOWING THE EXTENT OF THE LESION

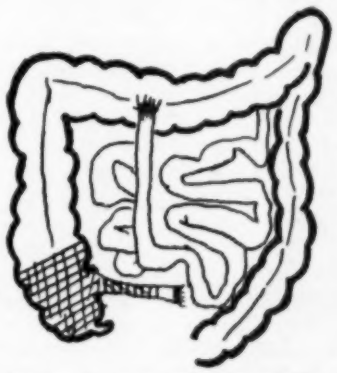


FIG. 15 (CASE 7)—FIRST STAGE TERMINAL ILEOTRANSVERSE COLOSTOMY

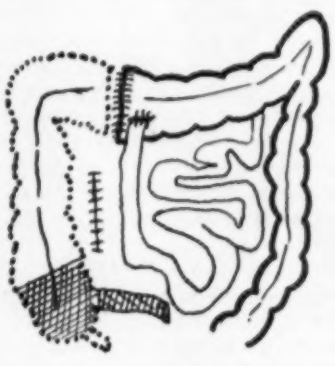


FIG. 16 (CASE 7)—RIGHT HEMICOLECTOMY

tained by one-stage hemicolectomy with the resection of the portion of the ileum and doing end-to-end ileocolostomy. The results are far superior as a one-stage procedure provided the general condition of the patient is fair. In the hands of the senior author (S. C. M.) this has been a very safe operation with no mortality. The criteria of the selection is any case with systolic blood pressure of 100 or above. All cases have full pre-operative preparation of bowel for resection.

This is a shocking operation and usually two blood transfusions (650 c.c.) are given. When the lesion is more wide a much more conservative attitude is advised. If the majority of the lesion is within 20" of the ileum, resection of ileum is advised with or without hemicolectomy depending on whether the lesion involves the ileocaecal area or not. But if the lesion in the small bowel is more widespread it is better to do multiple anastomosis than to resect. At times it will demand considerable patience on the part of the surgeon and may need more than one sitting and he may have to do as many as six or seven anastomoses to give a clear line for intestinal contents but it may be confidently hoped that his labour will be well paid. What looks a hopeless case will show marked improvement. Very often one comes across patients with very low general condition. In such circumstances the case is prepared as for large bowel surgery and two small blood transfusions of 150 c.c. each are given at an interval of 4 days and then operation done under local anaesthesia. The amount of surgery and the number of anastomoses is guided by the progress of the patient on the operating table. If the condition deteriorates many stage procedure is adopted.

ELECTROPHORESIS AND ITS APPLICATION IN MEDICINE

J. B. CHATTERJEA, M.D.
Department of Haematology,
School of Tropical Medicine, Calcutta

Under the influence of an electric current colloidal particles migrate, the velocity and direction of migration being determined by the nature of the particles, particularly upon the free charges on the surface of the particles in question. This phenomenon is utilized in electrophoresis. The term electrophoresis is derived from the Greek word *electron* (electric) and the Latin word *phore* (bearer). The speed of migration is governed by the pH of the medium and is influenced by the potential gradient in a linear fashion (Lewis, 1950).

Historical

In the first decade of the 19th century the phenomenon of electro-osmosis, as observed by the Russian physicist, Reuss (quoted by Lewis, 1950), marked the essential step in the evolution of modern electrophoresis. While studying the electro-osmosis of water through clay, Reuss in 1807, made the most significant observation that the clay particles and water moved in opposite directions. Porret (quoted by Lewis, 1950) in 1816 made notable observations on electro-osmosis using different types of animal membranes.

The next bold step in the theory of electrophoresis was taken by Hardy in the very last year of the nineteenth century. Hardy (1899) concluded that with the change of pH of the medium, by the addition of acid or alkali, the charge of the colloid particles could be changed with alteration of the direction of migration. According to this concept, there is an intermediate pH (the isoelectric point) at which the colloid parties do not show any movement.

In 1937 Tiselius of Sweden perfected the first practical apparatus for the electrophoretic analysis of a mixed colloid solution. With the advent of Tiselius apparatus, blood plasma made up of different species of proteins, was found to be an ideal substance that could be successfully analyzed by electrophoresis.

Technique

The basic strtucture of the electrophoresis apparatus is a specially designed U-shaped glass cell. The protein solution, such as plasma, is dialyzed for 24 hours or longer against a buffer solution (sodium diethylbarbiturate at pH 8·6 and ionic strength 0·1) and the protein concentration is adjusted to 1·4 per cent. The protein solution with approximately 1·4 per cent concentration is then injected into the cell and is overlaid with the buffer solution so as to form two boundaries one in each arm of the cell. Under the influence of an electric current, the protein molecules migrate upward into the buffer solution at one end and downwards away from the buffer solution at the opposite end. If different species of proteins are present in the solution, they will move with different speeds with the result that such of two original protein-buffer boundaries will split up into several boundaries. In the slightly alkaline pH of the medium the negatively charged protein particles move towards the positive pole. Albumin with the greatest negative charge moves fastest, being followed by the globulins which are separable into fractions 'alpha', 'beta' and 'gamma' respectively in order of their speed of mobility. With the aid of a specially constructed optical system, photographic pictures of the boundaries or "Schlieren" between the different peaks are recorded by changes in the refraction of light. The number of clearcut peaks depends on the number of protein fractions differing in electrophoretic mobility. The black peak silhouette in the electrophoretic tracing presents characteristic features in the normal and in various pathological states of protein metabolism. Area under each peak is determined by planimetry. Area under each peak is approximately proportional to the concentration of the individual protein fraction and thus relative concentration of the different fractions are calculated. Knowing the concentration of the total protein in the solution,

TABLE—I

Fraction	*% of total protein*	*g./100 c.c.*	*Molecular weight and shape of the molecule*	*Suggested function*
Albumin	60	4·2	69,000 oval	(1) Maintains plasma volume and its colloid osmotic pressure (2) Binds many metabolic products and drugs, viz., bilirubin, haematin, coproporphyrin, bile salts, lactic acid, fatty acids, uric acid, Evans blue, thiocyanate, sulphonamides, salicylates, arsenicals, quinine, plasmochin, atabrine, mercurials, digitoxin (3) Represents the protein 'metabolic pool' (4) Inhibits R.B.C. sedimentation and cephalin flocculation
Alpha globulins				
alpha—1	4	0·3	?	Represent the following: glycoproteins, muco proteins, bilirubin complexes, α-I lipoprotein, prothrombin, serum esterase, hypertensinogen, thyrotropic hormone (?), thyroxin protein complex, complement C'2
alpha—2	10	0·7	?	
Beta globulins*				
Beta-1 metal combining protein (binds Fe, Cu)	13	0·9	90,000 oval	Comprises AC globulin, plasminogen, amylase, luteinizing hormone, isoagglutinins, typhoid 'O' agglutinins, complete C'1, responsible for thymol turbidity test.
Beta-1-lipoprotein (containing small amounts of carotenoids and steroids)			1,300,000 spherical	Gofman and his associates (1950) have isolated giant molecules in the beta-1-lipoprotein fraction of atherosclerotic patients and they have shown that occurrence of such molecules is pathognomonic of atherosclerosis
Gamma globulins**	13	0·9	156,000	(1) Different bacterial and viral antibodies. (2) Role in cephalin flocculation and thymol turbidity tests

*Beta-2-globulin which closely follows beta-1 fraction does not form any peak but is merged in the valley that separates β^1 peak from the γ peak. It constitutes 3-4 per cent of the total proteins. When plasma is used, instead of serum, fibrinogen (which has the same mobility as the β^2 and which contributes 4 per cent of plasma protein) is represented by a distinct peak in the β^2 area, the combined β^2 in that case constituting 8 per cent (Lever, 1951).

**Gamma globulin fraction consists mainly but not wholly of antibodies. All antibodies are also not contained exclusively in the gamma globulin fraction. Two peaks γ_1 and γ_2 may occasionally be discernible in the gamma globulin area.

absolute values of the different fractions are easily obtainable.

In each analysis two electrophoretic patterns (the ascending and descending patterns) are obtained corresponding to the two boundaries created in the U-shaped cell by the protein solution. In the ascending pattern the peaks are steeper; but the relative areas and consequently the relative concentrations of the different fractions are more or less similar.

ELECTROPHORETIC PATTERN OF NORMAL HUMAN PLASMA

Normal human plasma shows five peaks, each of which represents a different protein fraction (Fig. 1). In addition each tracing also shows an extra peak which is produced by the transport of buffer ions by the proteins; this peak is known as the 'boundary anomaly' which does not obviously represent any protein fraction. It may be mentioned here that electrophoretic fractions do not represent pure and homogenous protein fractions. Each peak may represent heterogenous molecules with different shapes and sizes. Analysis of two important constituents of beta globulin fraction will illustrate this point. Beta-1-lipoprotein which contains more of lipoid substances than protein, is a large spherical molecule with a molecular weight of 1,300,000.

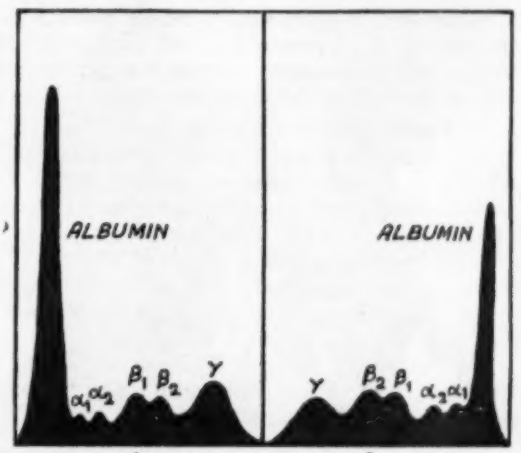


FIG. 1—NORMAL ELECTROPHORATIC PATTERN OF HUMAN PLASMA. A—ASCENDING PATTERN. B—DESCENDING PATTERN. THE DIFFERENT PROTEIN PEAKS ARE CLEARLY SHOWN

Beta-1-globulin (the metal combining protein) on the other hand has a narrow elliptical form with a molecular weight of 90,000. The two heterogenous moieties of beta-1-globulin, however, have identical charges and moving with equal speed they appear in the same peak (Sterling, 1951). The hetrogeneity of the electrophoretic fractions should be borne in mind especially when interpreting the abnormal patterns. The term 'electrophoretically pure' frequently seen in literature may not necessarily refer to a chemically pure single moiety.

The relative and absolute values of the different fractions as obtained by electrophoresis is given in Table 1 which also shows molecular weight and functions of the different fractions (Oncley, *et al*, 1950; Sterling, 1951).

Normal human plasma usually presents a typical electrophoretic pattern with relatively constant values for the different fractions (Dole, 1944). The physiological variation of the pattern being negligible pathological variations are easily identified. The pattern in normal children, however, is a little different from the adult pattern. The percentage of albumin, alpha-1-and alpha-2-globulin is slightly higher in children; the beta globulin is approximately half the usual level; the gamma globulin and fibrinogen are identical (Knapp and Routh, 1947).

ORIGIN OF PLASMA PROTEINS: Albumin, prothrombin and fibrinogen are elaborated in the liver. The site of production of alpha-1-globulin is still debatable, but many authorities believe that it has a hepatic origin. All the other fractions (alpha-2-beta and gamma globulins) have extrahepatic origin. Origin of gamma globulin has been traced to the spleen, lymph nodes and other tissues containing plasmocytic and lymphocytic cells.

GENERAL TREND OF ELECTROPHORETIC PATTERN IN PATHOLOGICAL CONDITIONS

Diminished albumin with increased globulin fractions represents a common form of dysproteinaemia. Common conditions known to cause a hypoalbuminaemia may be listed as follows (Loeb, 1941):

(I) Inadequate protein intake.

(II) Excessive loss of albumin—nephrosis, type II nephritis, recurrent haemorrhage, massive chronic suppuration, severe burns, repeated paracentesis of pleural or ascitic fluid.

(III) Interference with synthesis of albumin—liver diseases, congestive cardiac failure, severe anaemia.

The different conditions giving rise to increase of serum globulins may be listed as follows:

The particular fractions involved are shown in parenthesis (Loeb, 1941; Lewis, 1950), where F represents the fibrinogen fraction.

INFECTIONS:

Kala-azar (γ).
Leprosy (α_2, γ).
Tuberculosis (α_2, γ).
Pneumonia, lymphogranuloma venereum, subacute bacterial endocarditis, many other infections, acute or chronic.

HYPERSENSITIVITY STATES AND COLLAGEN DISEASES:

Periarteritis nodosa (α_2, γ and F).
Rheumatoid arthritis (α_2, γ and F).
Lupus erythematosus (γ, F).
Sarcoidosis (γ, α_2, F).
Acute nephritis (α_2, F).
Nephrotic syndrome (α_2, F).

NEOPLASMS:

Multiple myeloma (β or γ or F).

DISEASES OF LIVER:

Portal cirrhosis (γ, α_2, F).
Acute hepatitis (γ, α_2).
Infectious hepatitis (γ, α_2).
Obstruction of bile ducts (β).

ELECTROPHORESIS IN THE STUDY OF BLOOD DISEASES

Some of the fundamental observations in haematology were made with the aid of electrophoresis. Pauling and his associates (1950) made extensive studies on sickle cell haemoglobin and proved that haemoglobin in sickle cell has solubility property and electrophoretic mobility quite different from those of normal haemoglobin. Stefanini and Bernfeld (1951) reported an abnormal peak in the alpha globulin area between α_1 and α_2, which they termed α_x and which they found consistently in thrombocytopenic purpura and haemophilia. A thrombocytopenic plasma factor has been isolated and its electrophoretic properties studied in detail (Stefanini and Chatterjea 1951; Stefanini, Dameshek, Chatterjea, *et al*, 1953). After transfusion of thrombocytopenic plasma the abnormal electrophoretic pattern could be traced in normal recipients (Stefanini, Chatterjea and Adelson, 1952) for a few days. But transfusion of haemophilic plasma, under similar conditions induced no change in the haemostatic mechanism and electrophoretic pattern of normal people (Stefanini, Chatterjea and Salomon, 1951). Gutman *et al* (1941) and Rundles *et al* (1949) studied in detail electrophoretic patterns in myeloma. In leukaemias and uncomplicated anaemias no significant deviation from normal pattern has been noticed.

Several peaks, all having vitamin B_{12} binding properties were recently recorded by Latner, Ungley and others (1953) in samples of concentrated human gastric juice. One of these fractions is particularly rich in mucoprotein and may represent the factor isolated by Glass *et al* (1952).

PRESENT STATUS OF ELECTROPHORESIS

With the advent of electrophoresis, workers entertained high hopes that many diseases would present distinctive patterns absolutely diagnostic of particular conditions. After a decade of extensive investigation in the different centres of the world we know that

characteristic and diagnostic patterns are not always present and variable or nonspecific changes may disappoint many clinicians seeking specific diagnosis from electrophoretic elucidation of clinical syndromes. Nevertheless electrophoresis marks a new era in the process of isolation, characterisation and purification of colloid materials derived from different sources. Its manifold applications make it an indispensable instrument for any research institution. It has proved to be an essential tool to guide the physicochemical fractionation of proteins and to control the concentration and purification of different protein fractions with hormonal and enzymatic activities. Its role in investigative works on clinical states characterised by hyper-, hypo- or dysproteinaemia cannot be overemphasised.

References

Dole, V. P.—*J. Clin. Invest.*, **28**: 708, 1944.

Glass, G. B. J., Boyd, L. J., Rubinstein, M. A. and Svigals, C. S.—*Science*, **115**: 101, 1952.

Gofman, J. W., *et al*—*Science*, **111**: 166, 1950.

Gutman, A. B., Moore, D. H., Gutman, E. B., McClellan, V. and Kabat, E. A.—*J. Clin. Invest.*, **20**: 765, 1941.

Hardy, W. B.—*J. Physiol.*, **24**: 1899, quoted by Lewis, L. A.

Knapp, E. L. and Routh, J. I.—*Federation Proc.*, **6**: 267, 1947.

Latner, A. L., Ungley, C. C., Cox, E. V., McEvoy, Bowel, E. and Raine, L.—*Brit. M. J.*, **1**: 467, 1953.

Lever, W. F.—*Bull. New England Med. Center*, **13**: 160, 1951.

Lewis, L. A.—Electrophoresis in Physiology. A monograph in American lectures in Medical Physics. Charles C. Thomas, Springfield, Illinois, U.S.A., 1950.

Loeb, R. F.—*New England J. Med.*, **224**: 980, 1941.

Oncley, J. L., Gurd, F. R. N. and Melin, M.—*J. Am. Chem. Soc.*, **72**: 458, 1950.

Pauling, L., Harvey, A., Itano, S., Singer, J. and Wells, I. C.—*Science*, **110**: 543, 1949.

Porret—Quoted by Lewis, L. A.

Reuss—Quoted by Lewis, L. A.

Rundles, R. W., Dillon, M. L. and Dillon, E. D.—*J. Clin. Invest.*, **29**: 1243, 1950.

Stefanini, M. and Chatterjea, J. B.—*J. Clin. Invest.*, **30**: 676, 1951.

Stefanini, M. and Bernfeld, P.—*Proc. Soc. Exp. Biol. Med.*, **77**: 551, 1951.

Stefanini, M., Chatterjea, J. B. and Salomon, L.—*Proc. Soc. Exp. Biol. Med.*, **78**: 274, 1951.

Stefanini, M., Chatterjea, J. B. and Adelson, E.—*J. Clin. Invest.*, **31**: 665, 1952.

Stefanini, M., Dameshek, W., Chatterjea, J. B., *et al*—*Blood*, **8**: 26, 1953.

Sterling, K.—*Bulletin New England Med. Center.*, **13**: 121, 1951.

Tiselius, A.—*Biochem. J.*, **31**: 1464, 1937.

VITAMIN A IN ACNE VULGARIS

K. D. LAHIRI, M.D. (ZURICH), PH.D. (DERMAT.) EDIN., M.B.B.S. (PATNA), D.T.M. & H.(LOND.), F.D.S.(LOND.)
Asst. Professor of Medicine (Skin Diseases), Calcutta Medical College

AND

F. J. SCANDRETT, B.SC. (LIVERPOOL),
Edinburgh Royal Infirmary

Treatment of acne vulgaris with vitamin A has yielded somewhat variable results. Maynard (1941) found that administration of vitamin A produced some improvement. Saunders (1944) taking vitamin A himself to alleviate a mild chronic sinusitis, observed that although there was no appreciable effect on the sinusitis, after six months of the treatment, pustules of acne vulgaris had disappeared from his back for the first time in 21 years. On the other hand, Lynch and Cook (1947) found no marked improvement, and Obermayer and Foost (1945) were only prepared to state that some forms of acne vulgaris undoubtedly benefited from vitamin A therapy although others were apparently uninfluenced. Straumfjord (1943) treated one hundred cases of acne with large doses of vitamin A daily for 6 months and claimed that the lesions disappeared in 79 per cent of his patients. Davidson and Sobel (1949) treated cases of acne vulgaris with vitamin A with good results. Downing (1948) also observed good results with vitamin A therapy in acne with numerous comedos. In an experimental study in 35 cases of acne vulgaris treated with vitamin A therapy, Sovitt and Obermayer (1950) found improvement in only 20 patients out of the 35, while 12 showed no change and 3 exhibited an increase in the severity of the lesions. A large number of cases were treated with good results with vitamin A administration by Lahiri (1949).

Experimental

In all, 75 patients were given 100,000 I.U. of vitamin A daily by the oral route. Of these, 39 were male (33 unmarried, 6 married), and 36 were female (29 unmarried, 7 married). All had previously resisted other forms of treatment, some for several years. During the period of vitamin A therapy no other treatment was given.

To test whether the dietary supply or the absorption of the vitamin was defective the vitamin A and carotene contents of the serum were measured by the method reported by the authors (Lahiri and Scandrett, 1951). As a test of utilisation the rate of removal of vitamin A from the plasma was used in comparison with the normal rate (Lahiri and Scandrettt, *loc cit.*).

Since changes in steroid metabolism have been reported in acne vulgaris (Wile, 1939) the excretion of 17-ketosteroids was measured in some cases.

Observation and Results

Table 1 summarises the results of treatment, and the effects are shown photographically in typical cases (Figs. 4, 5 and 6). The great majority of the patients showed complete disappearance of pustules within three months, and all showed some improvement. The more resistant patients required longer treatment but all could be regarded as cured at the end of six months. The work is too recent for information concerning relapses to be of any value.

Table 1—Period Required for the Cure of Acne Vulgaris Cases with 100,000 I.U. Vitamin A by Oral Route, Daily

No. of Cases	*Lesion*	*Time taken for disappearance of lesions*	*Remarks*
30	Face mostly papules and pustules with comedos and oiliness	2½ months	Completely cured—started clearing after five weeks
20	Face and back	3 months	Completely cured
10	Face and chest	3 months	Chest cleared last
10	Cases with cysts which proved resistant to treatment	5½ months	Had vitamin A therapy only
5	Very resistant cases with cysts (previously treated by routine therapy for four years; relapsed from 3-4 times yearly)	6 months	Had vitamin A therapy only

Table 2—Showing Mean Values of Vitamin A and Carotene in Blood of Acne Vulgaris Patients as Compared with those in Normal Males and Females

	Mean vitamin A	*Mean carotene*
Acne vulgaris cases ...	175·1	59·4
Normal males ...	200·3	65·7
Normal females ...	174·7	71·6

It is evident from Table 2 that even at the beginning of treatment the acne patients had serum vitamin A and serum carotene levels not significantly lower than healthy persons from the same population. Hence the beneficial effects of vitamin A cannot be ascribed to the correction of a dietary deficiency or to the forcing of vitamin A against defective absorption.

The normal subjects all show a marked rise in the serum vitamin A to a peak about three times the fasting level. This peak, reached some six hours after the test dose, was followed by a steady fall back to the fasting level which was reattained at the end of twenty-four hours. The acne patients, on the other hand, showed a very much smaller increase in the serum vitamin A, although the highest value occurred at the same time in the normals; moreover the subsequent return to the fasting level was very slow. The curves suggest that in acne, vitamin A is less efficiently absorbed than by healthy persons and that it is removed from the plasma more slowly. This interpretation does not explain the occurrence of "normal" fasting vitamin A concentrations in the series of acne patients whose diet was very comparable with that of the controls, and it must be admitted that the true explanation of this observed phenomenon is still obscure.

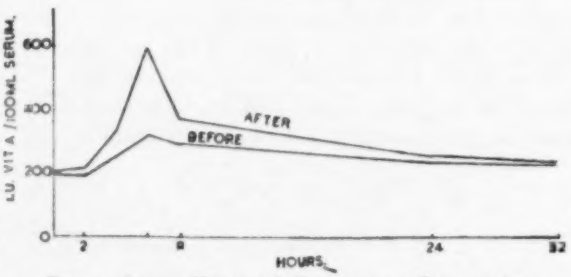


Fig. 2—Shows Vitamin A Curves in a Case of Acne Vulgaris before and after Vitamin A Therapy

Although only a single case has been studied in this way, the reversion of the serum vitamin A curve to the normal pattern is very striking. It confirms the difference shown in Fig. 1 and suggests that, whatever the explanation, the peculiar response of acne patients to a test-dose of the vitamin is in some way related to the lesions.

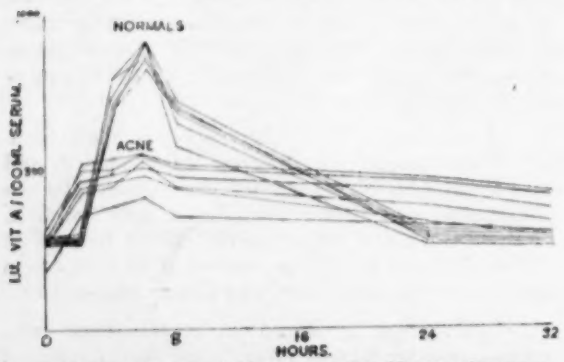


Fig. 1—Shows Vitamin A Curves in Six Normal Subjects and in Six Cases of Acne Vulgaris, after Ingestion of 100,000 I.U. Vitamin A

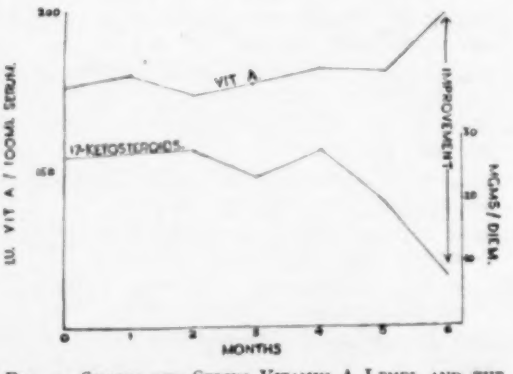


Fig. 3—Shows the Serum Vitamin A Level and the Corresponding 17-Ketosteroid Values in a Case of Acne Vulgaris, during Prolonged Vitamin A Therapy

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In this and in another case similarly investigated, the changes in serum vitamin A were inconstant (as would be expected from a consideration of Table 2). The 17-ketosteroid excretion, however, fell in both cases as the skin condition improved. Figs. 4, 5 and 6 show photographs of cases of acne vulgaris.

Discussion

Wile, *et al* (1939), in a detailed study of eight male and female acne vulgaris cases, came to the conclusion that the adolescent type of acne was due to a sex hormone imbalance, for they showed experimentally, using the biological assay methods of Gallagher and Koch, that patients with acne showed a moderate increase in the excretion of androgen with a corresponding decrease in the excretion of oestrogen, and that in both sexes the androgen/oestrogen ratio was almost twice the normal value. They further thought that the spontaneous cure of acne following the completion of adolescence seemed to indicate a restoration to the normal of the androgen/oestrogen ratio. Barber (1948) observed in both sexes that acne normally results from androgenic stimulation of the hair follicles. This observation was confirmed by Lawrence and Werthessen (1942), who also suggested that acne might be caused by an imbalance between androgen and oestrogen, and that it is the increase in the *ratio* of androgen to oestrogen rather than a decrease of the latter, that is of aetiological importance. Keddie (1948), thought that the skin, altered by endocrine imbalance, became in some way susceptible to inadequate supplies of vitamin A and might require larger amounts of the vitamin for normal function; for he observed clinically that the administration of oestrogen accentuated the needs of the skin for vitamin A. This observation indicated that the circulating oestrogen may act on the epithelium, either by direct antagonism to vitamin A, or by increasing the metabolic need of the cells for vitamin A. Further evidence indicated that oestrogen might influence indirectly the formation of acne, since antagonism also exists between oestrogen and androgen. In our cases the 17-ketosteroid values tended to be high before vitamin A therapy, and low after prolonged vitamin A therapy (Fig. 3), with a corresponding improvement in the patients' condition.

It seemed significant that with a vitamin A deficiency, as well as in acne, the maximal degree of follicular hyperkeratosis is present during adolescence. Thus, the degree of sexual development appears to be the critical factor in the response of the pilosebaceous structures to vitamin deficiency (Obermayer, 1948).

The suggestion is made that of the many factors alleged to play their role in the pathogenesis of acne, large doses of vitamin A over a prolonged period might do much to alleviate the sex hormone imbalance, and might eventually restore the androgen/oestrogen ratio.

Summary

1. Vitamin A therapy in doses of 100,000 I.U. orally, daily, for a period of three months cured 80 per cent of the acne vulgaris cases and 20 per cent required further treatment for from four to six months. No evidence of toxicity was observed in any case.

2. The serum vitamin A and carotene levels in cases of acne treated by various means but before vitamin A therapy were not significantly lower than in normal healthy persons.

3. The response of the serum vitamin A to a single test dose of the vitamin was much less in the acne patients than in healthy controls.

4. The 17-ketosteroid excretion in two acne cases (male) was near the upper limit of the normal range. It fell after prolonged administration of vitamin A coincidentally with clinical improvement.

5. The suggestion is made that acne vulgaris may be due to two factors (1) the patients' endocrine status and, (2) a defect in the normal utilisation of vitamin A, and that these two factors may have some inter-relationship with each other.

Acknowledgment

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References

Barber, H. W.—Modern Trends in Dermatology. 1948. London, Butterworth & Co., p. 109.

Baumann, C. A. and Moore, T.—*Biochem. J.*, **33**: 163, 1939.

Belisario, J. C.—*Arch. Dermat. Syph.*, **61**: 242, 1950.

Butterworth, R.—*Penn. M. J.*, **44**: 1162, 1941.

Davidson, D. M. and Sobel, A. E.—*J. Invest. Dermat.*, **41**: 229, 1949.

Downing, J. G.—*Am. Pract.*, **2**: 359, 1948.

Frazier, C. N. and Hu, C. K.—*Arch. Int. Med.*, **48**: 501, 1931.

Keddie, F.—*Arch. Dermat. Syph.*, **58**: 64, 1948.

Lahiri, K. D.—*Indian J. Ven. Dermat.*, **16**: 681, 1949.

Lahiri, K. D. and Scandrett, F. J.—*Edinburgh M. J.*, **59**: 39, 1952.

Lawrence, C. H. and Werthessen, N. T.—*J. Clin. Endocrinol*, **2**: 636, 1942.

Lynch, F. W. and Cook, C. D.—*Arch. Dermat. Syph.*, **55**: 356, 1947.

Maynard, M. T. R.—*Arch. Dermat. Syph.*, **42**: 864, 1941.

Nicholls, L.—*Indian M. Gaz.*, **68**: 681, 1933.

Obermayer, M. E.—*Arch. Dermat. Syph.*, **58**: 72, 1948.

Obermayer, M. E. and Foost, C. D.—*Arch. Dermat Syph.*, **55**: 356, 1945.

Saunders, T. S.—*Arch. Dermat. Syph.*, **50**: 199, 1944.

Straumfjord, J. V.—*North-West M. J.*, **41**: 229, 1943.

Sovitt, L. E. and Obermayer, M. E.—*J. Invest. Dermat.*, **14**: 283, 1950.

Wile, U. J., *et al*—*Arch. Dermat. Syph.*, **39**: 200, 1939.

PRACTITIONERS' SERIES

PSYCHONEUROTIC REACTION TYPES
(An aetiological approach)

L. N. RAO, B.SC., M.B.B.S.,
Medical Officer, Tal: Ashti, Dist. Bhir via Ahmednagar

INTRODUCTION

As a considerable number of cases attending the out-patients' department of a general hospital belong to the group ot psychoneurosis, for a general practitioner, a general idea about the aetiology, symptomatology, differential diagnosis and therapeutic methods of psychoneuroses will definitely be of immense help.

DEFINITION

Psychoneuroses are a group of maladies, presenting a bizarre combination ot physical and mental symptoms. the cause of which cannot be attributed to any of the recognized organic diseases. Aetiologically it is supposed to be the result of maladaptation of the individual to the variations of the environment.

INCIDENCE

Supposed to be more common in the females particularly during puberty, pregnancy and climacteric; but some cases ot hysteria have been noted in children below ten years of age. Wars and famine conditions seem to increase the incidence. Insurance and the compensation act and also culture and education seem to have a further effect on the incidence. Early disease in childhood may also contribute to higher incidence of predisposed psychoneurotic personality.

SYMPTOMATOLOGY

The symptoms in psychoneurosis are so vast and variable that it has been said that any disease or symptom can be simulated which can be thought of or even dreamt of. But broadly one can divide the symptoms into somatic and psychic and the somatic again into motor and sensory.

Some of the common sensory symptoms are hyperaesthesias, paraesthesias, analgesia and hyperacusis, anosmia, hysterical deafness, vague pains, etc. Some of the motor symptoms are paralyses and twitchings, convulsions, tics, etc.

The psychic symptoms are fear, anxiety, feeling of impotence—and splitting of personality, etc.

Considering the symptoms and aetiology a modification of Freud's original classification which is given below is very useful from the clinical point of view:

(a) Neurasthenia.
(b) Anxiety neurosis.
(c) Conversion hysteria—'hysteria'.
(d) Psychasthenia (obsessive—compulsive).

In neurasthenia, the main feature is physical and mental fatigue associated with irritable weakness.

In anxiety neurosis, the main feature is unknown anxiety (anxiety attributed to no cause); tachycardia, palpitation, globus hystericus, tremors, polyuria and nocturnal dyspnoea and sleeplessness are sometimes seen.

In conversion hysteria the main feature is the dissociated symptoms, paralyses not corresponding to any particular nerve, imitation of difficult postures—cataplexy—hysterical type of rigidity and peculiar displacement of symptoms, i.e., one symptom is substituted by another one, unwarranted. Another main feature of it is that the subject is unaware of the nature of the symptoms.

In psychasthenia obsessions and fixed fears (phobeas) are the main indications.

DIFFERENTIAL DIAGNOSIS

A variety of gastro-intestinal diseases such as habitual constipation, anorexia nervosa, cardiospasm, hyperacidity, etc., whose main cause is sympatheticotonia may simply be secondary manifestations of anxiety and mental conflict. But due clinical and laboratory investigations such as barium meal skiagrams F.T.M. and screening, etc., must be done before they are attributed to psychological causes. Some of the gynaecological conditions such as dysmenorrhoea (spasmodic) and dyspareunia, pseudocyesis, menorrhagia, may be the manifestation of psychoneuroses but that should be confirmed by the laboratory and other tests.

In cases of anxiety neuroses particular stress may be put on thyroid and B.M.R. examinations may sometimes be necessary in some obscure cases.

Cases of hysteria are not difficult to be differentiated from true organic disease counterparts. Hysterical anaesthesia may be differentiated from true anaesthesia by Janet's test of saying 'yes' and 'no' for a touch and for not feeling a touch respectively. In unconscious hysteric cases a very good test is that of cataplexy—a limb can be left in whatever position it is left and there is usually a hysteric type of rigidity.

The differential diagnosis between psychosis and psychoneurosis though not difficult is but important legally and clinically.

In psychosis there is some 'derealisation' of the environment i.e., there is a qualitative lack of discrimination of the objects by the individual whereas in psychoneurosis there is only quantitative lack.

In psychosis the latest formed function of the individual i.e., the language is altered whereas in psychoneurosis language remains much the same.

AETIOLOGY AND PSYCHOPATHOGENESIS

From the ancient 'wandering of the womb' to the latest 'psychoanalytic' schools of thought many theories have had their span of prominence. Each had put stress on one particular aspect of aetiology, which

though it may not explain all by itself, yet forms an intelligible part of the causation of psychoneuroses.

Most of the theories were put forward after studying the cases of conversion hysteria.

Charcot laid stress on the inherited taint and suggestibility, stating that all the symptoms in hysteria could be produced by hypnosis.

His successors greatly modified his views. Bernheim came to the opinion that all individuals can be hypnotised by suitable methods and that all the symptoms in hysteria could be produced by hypnosis (implying that every individual can display hysterical symptoms under certain conditions).

Janet says that hysteria is a malady of the synthesis of personality. It is a form of mental depression, characterised by the retraction in the field of personal consciousness and a tendency to dissociation (i.e. independent functioning and emancipation of the system of ideas and functions that constitute the personality of the individual). He stated further that, in contradistinction to psychasthenia, the dissociation in hysteria was molar.

Babinski, offering no theory to account for the abnormal suggestibility, merely stated that hysteria was the result of suggestion.

Baudouin and Coue regard auto-suggestion as the main mechanism of psychoneurosis.

Another group of psychologists (Freud, Breuer-Jung) attacking the problem more seriously, have come to the conclusion that the causative factors of psychoneurosis lay much deeper in the mind. It was Freud who evolved the psychoanalytic theory. Main features of the psychoanalytic theory are that

1. The mind has three stratified layers—conscious, foreconscious, unconscious.

2. Ordinary memories were stocked in the foreconscious and could be brought into consciousness. But memories of painful nature were thrust down into the unconscious. This process was called by him as 'repression'.

3. That the hysterical symptoms were the result of escape of the repressed material from the unconscious. He emphatically stressed that the nature of this repressed material was of sexual nature (Oedipus complex). And thus he said that hysteria is the result of conflict between the super ego and the wish not palatable to super ego.

Jung, while accepting most of the theory formulated by Freud, stressed that besides sex there are other factors which would cause repression. And then he maintained that hysteria is due to 'regression' of the individual to the child's age of make-believe and fantasy, when a particular individual is under environmental stress. This regression being an escape phenomenon—an escape from the existing conflicting environment.

Adler says that hysteria is the overcompensation of the individual to an existing inferiority complex.

Reviewing the above mentioned theories critically one will come to the conclusion that all of them are inelastic. But noting the gratifying results of the application of Freud's psychoanalytic theory in treatment of psychoneuroses, one is inclined to believe that this theory may be the important link.

Some important points must be kept in view in formulating any new theories about the causation of psychoneuroses.

(1) Hereditary factors—personality predisposition—previous suffering from encephalitis, vitamin B deficiency, ingestion of alcohol, have some contributory importance to the causative factors.

(2) Introverts are more prone to psychoneuroses than extroverts.

(3) That other methods besides 'psychoanalysis' have proved successful in some cases. In fact Weir Mitchel suggests simple rest as a cure for some psychoneurotic conditions and it is seen that by mere rest some conditions do improve.

(4) That physiological experiments (recent) have proved that by stimulation of certain parts of the brain there is recital of past incidents. So most probably certain parts of the brain are associated with memory, will, imagination and volition. And, after all, the brain itself may play the important part of converting mental energy into its different forms and thus become an agent in the resulting of psychoneurosis.

(5) Leucotomy of the frontal lobes disconnects the frontal cortex from the hypothalamus and results in lesser emotional activities and thus is used in schizophrenia as a treatment.

(The following original hypothesis is submitted in the hope that considering the growing physiological experimental evidence and results, it may prove a contributory, if not complete, explanation of the psychoneuroses).

Psychodynamic Theory

Hypotheses—1. Life of an organism is just 'vital energy' which is produced by different systems in the body such as the metabolic, haemopoietic and endocrine glands, etc. Vital energy is again converted into specific forms of energy, which provide the individual the requisite facilities and equipments (both physical and mental) to acquire suitable things from the environments for the usages of the different systems of the body, particularly in the preservation of the self and of the species.

(2) Self preservation and preservation of species i.e. food seeking and sex seem to be the main motives for which the vital energy is converted into its different complicated conversion forms such as locomotion, mentation and instincts, etc.

(3) A living organism is the best autocharging, autonomous complex machine which feeds on the environment as shown in Fig. 1.

(4) The vital energy which is produced by different systems in the body is stored in the brain probably in the form of a charge (analogous to electric charge)

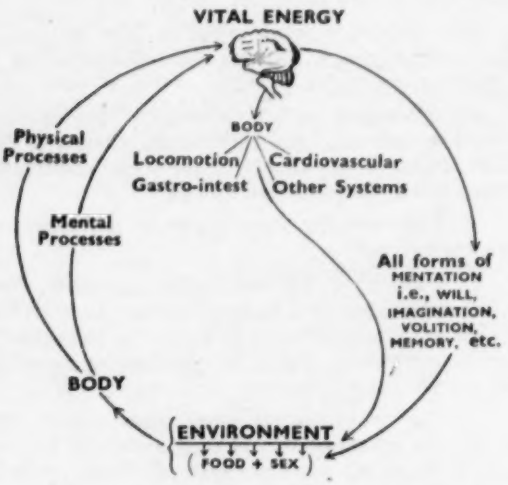

FIG. 1—SHOWING COMPLETE CYCLE OF AUTO-CHARGING MECHANISM

and in different portions of the brain it is converted into its different forms i.e. either physical or mental. That is all the forms of physical activities and mental activities are the converted forms of this vital energy.

(5) Probably in some parts of the brain the physical form of energy can be converted into mental forms and *vice versa*. But mostly it is the mental form which is being continuously converted into its equivalent physical form.

(6) The brain acts as a storage of the vital energy and it also converts it into its different forms. At the same time it also plays the part analogous to an electric condenser. That is any charge of vital energy which has not been converted adequately and let out in the form of physical reaction or just mentation is held by the brain in the form of a charge of vital energy (the portion of brain playing this condenser role may be the nerve tissue surrounding the network of association fibres (Fig. 2).

(7) There is a limit for this condensing action of the brain i.e. the brain has a condensing capacity. And if the vital energy be expressed in some units such as 'psychomotor units' then the condenser capacity can be expressed in X PMU.

(8) If all ideas (which I assume to be converted forms of vital energy) are expressible by their psychomotor potential units, such as A PMU, B PMU, C PMU and D PMU, etc., then their inadequate letting out will charge the condenser portion of the brain with a charge equivalent to the corresponding PMUs. In due course of time the resultant charge of the condenser mechanism of the brain may become equal to its condensing capacity (X PMU) as in Fig. 3.

(9) When the charge of the condenser equals to the capacity of the condenser then any further inadequacy in letting out any further charging of the brain is immediately meted out by simultaneous conversion of a certain charge into its physical and mental conversion forms, the different combination of which may form a psychoneurotic syndrome.

(10) Considering certain other mechanisms such as laughter, dreams, rest, sleep, games, yawning, sublimation, rationalisation and other psychological mechanisms which play an important part in discharging some of the charge of the condenser portion of the brain, an individual may take any length of time in reaching the stage of overflow (Fig. 4).

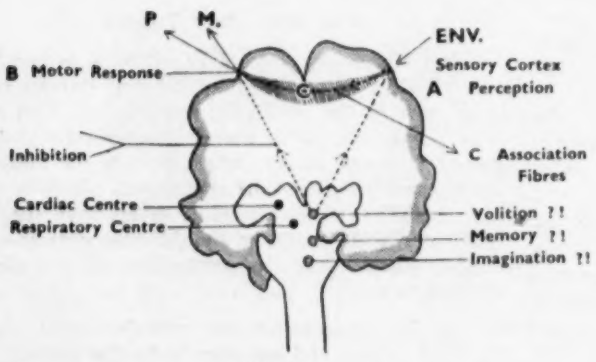

FIG. 2
A = PERCEPTION INVOLVING EXPENSE OF CERTAIN PMU FROM SOURCE; B = PHYSICAL RESPONSE OF INDIVIDUAL OF SOME PMU AND C = ASSOCIATION FIBRES

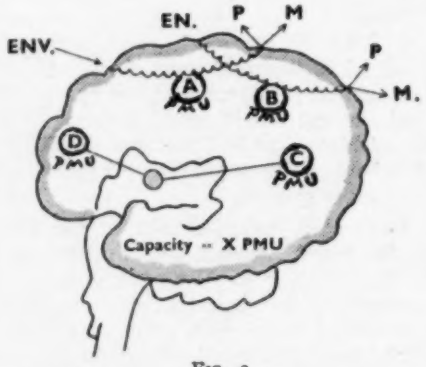

FIG. 3
TWO ENDOGENOUS AND TWO EXOGENOUS IDEAS WITH C, D, B, A, PMU. CAPACITY OF CONDENSER ACTION OF THE BRAIN = XPMU

Introvert		Extrovert	
Uninhibited Physical Response	=(−)PMU	Uninhibited Physical Response	=(+) PMP−
Laughter	=(−)PMU+	Laughter	=(+).·.PMP−
Rest	=(−)PMU+	Rest	=(+).·.PMP−
Sleep	=(−)PMU+	Sleep	=(+).·.PMP−
Games	=(−)PMU+	Games	=(+).·.PMP−
Failures	=(+)→PMU(++)	Failures	=(±).·.PMP±
Doubt and Uncertainty	=(+)→PMU(++)	Doubts	=(−).·.PMP−
Boarding	=(+)→PMU(++)	Sublimation	=(+++)
		Rationalisation	=(+++)

An extrovert is more capable of discharging the charge of the condenser of his brain, than an introvert. Sometimes pseudo-extrovertion can be seen in hysterics. It is only an attempt to deplete the nervous tensions.

FIG. 4

(11) Condensing capacity of certain individual's brain depends upon the nature of the brain tissue, the personality, the environmental conditions at a particular time. The quality of the brain tissue depends upon congenital and acquired factors, i.e. syphilis and encephalitis, meningitis, diphtheria, typhoid fever, etc.

(12) In an introvert the depleting mechanisms mentioned in hypothesis 10 are less active than in an extrovert that is why an introvert is more liable to charge the condenser mechanism of the brain upto the capacity in a shorter span of life and thus may achieve the psychoneurotic level in a certain period.

(13) Neurasthenia is a prepsychoneurotic level syndrome i.e. it is the slow continuous discharge of the vital energy of the condenser, in an introvert, with a continuous inhibiting situation. It is a 'water wheel' type of individual response. The inhibiting situation is of low PMU but continuous and sustained as in Fig. 5.

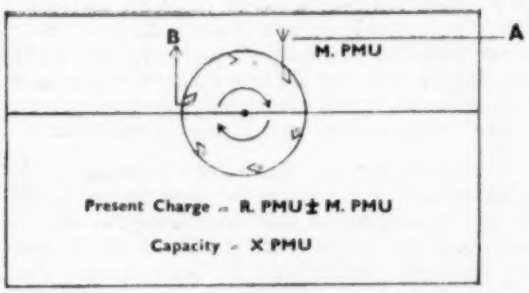

FIG. 5—NEURASTHENIA
A = INHIBITING FACTOR OF LOW PMU BUT CONTINUOUS
B = CONTINUOUS DISCHARGE OF VITAL ENERGY FROM THE CONDENSER

(Some examples of the situation being wrong choice of wife, profession and property or continuous failures in any attempts in life).

(14) Anxiety neurosis is similar to above but the inhibiting mechanism is of a high PMU, and of a sudden nature particularly in the form of anxiety. And the discharge is slow, continuous and sustained, the examples being sudden loss of both parents, property or job, etc. and accidents and trauma involving great personal risk (Fig. 6).

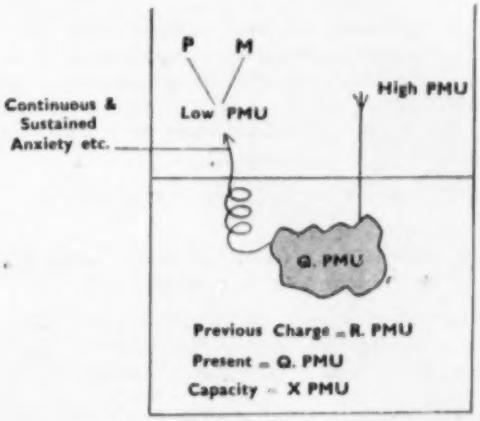

FIG. 6—ANXIETY NEUROSIS

(15) The mechanisms in hypotheses 13 and 14 in personalities of low condenser capacities may account for psychasthenic syndromes (obsessive—compulsive psychoneurosis).

TREATMENT OF PSYCHONEUROSIS

There are as many methods of treatment available as there are theories. From blistering the paralysed limbs to the present day psychoanalytic methods, there is so much of variety that each method might have become a subject of individual fancy. The results of different methods have some percentage of cures to their credit. That is why it is difficult to discard any or all of them as utterly baseless and useless.

In neurasthenia suitable psychotherapy is necessary. Psychoanalysis is highly successful. Sometimes simple explanation of the cause of the condition and active efforts on the part of the individual to adapt to varying conditions of environment itself lead to remarkable cure and recovery. But in long-standing cases where there is secondary anorexia and dyspepsia, a suitable tonic, a bitter or a stimulant may also be prescribed as an adjuvant.

In anxiety neuroses psychoanalysis has proved to be the best. In fact analysis by any one of the following methods may be used to advantage.

(a) *Free association method*—In this, the subject is asked to relax and relate freely whatever comes to

his mind and without any interference (verbal) the analyst records the related facts. On later sessions, on slight coaxing on particular doubtful points the subject may relate some more incidents which may also be recorded.

(b) *Hypno-analysis*—In this the subject is submitted to preliminary tests for suggestibility and if it is worthwhile, he is immediately hypnotised. In the later sessions of hypnosis when the report is freely established then one may submit the subject to a complete analysis or merely try suggestive therapy.

(c) *Narco-analysis*—Some suitable drugs are used to induce a state of subminimal anaesthesia in which the subject's inhibitions are lessened and the subject begins to talk freely. The drugs mostly used are Amytal—7½ grains in 5 c.c. of distilled water given intravenously at the rate of 1 c.c. a minute.

Light anaesthesia by NO_2 and ether are also used.

L. Von Meduna technic is that of inhalation of CO_2 (20 per cent) and O_2 (80 per cent).

The main principle of the analytic methods is by 'psychocatharsis', i.e. revival of memory of past incidents and 'abreaction' i.e. letting it out by recital.

In hysteria, a certain amount of restraint must be had in using the psychoanalytic technic. In acute forms it is inadvisable and impracticable. In acute hysteria sedation with bromides or luminal or phenobarbitone or even morphia is advisable. But prolonged continuous administration of sedatives in any form is strictly forbidden because instead of helping the patient to fight the disease it weakens the fighting mechanisms of the patient (psychodynamic theory).

Once the acute stage of hysteria is passed, the patient must be subjected to psychotherapy of one form or other, either analysis or suggestion. In hysteric paralyses and vomiting and such other distressing symptoms in which the wastage of time in analysis is liable to prove harmful to the patient, it is better that such cases be submitted to hynotic suggestion.

In psychasthenia, persuasion and suggestion with rest and correcting general health may prove of value. Above all, correcting general health, providing rest, active physical recreation and regular hours of sleep are conducive to a healthy mind and healthy body.

TREATMENT FROM PSYCHODYNAMIC POINT OF VIEW: As we have seen from the hypotheses enumerated above the main factors in the production of the psychoneurosis are—

(1) Heredity.

(2) Repleting mechanisms of the charge of the condenser.

(3) Depleting mechanism of the charge of the condenser.

Hereditary factors are important yet from the point of view of treatment they can be ignored because they are beyond rectification.

Repleting mechanisms are the important mechanisms by which the mental tension of the individual is considerably increased. Failures in competitions, in social life and cultural inaccessible standards, inhibitions of normal physical responses by the censors and taboos placed by cultural society, etc., play an important part in crushing the defences of an individual. Thus cultural psychiatry, lessening the spirit of competition in games, provision of enough food and clothing and assurance of personal safety and safety of the family (Govt. Insurance) and certain other provisions may allow the depleting mechanisms of the brain work more satisfactorily.

Depleting mechanisms must be provided to all the individuals. The subjects must enjoy the greater amount of physical and mental freedom. Active physical recreation in which there is the least amount of competitive spirit must be encouraged. Games involving lesser amount of risk and anxiety, activities providing amusement and invoking unrestrained laughter, rest (physical and mental), good hours of sleep and hobbies are all very good examples of suitable depleting mechanisms of the charge of the brain.

I think that laughter which involves the action of many muscles in the body is a surplus physical reaction to let out certain amount of the charge of the brain. It is a surplus response to a relatively simple stimulus. Men seek to laugh because they feel happy having laughed.

In the above lines I had mentioned certain general mechanisms by which one could fortify the defences of an individual against detrimental factors of environment. In the following lines I would suggest different methods of treatment for different syndromes though they are all stages of and types of a battle between the individual and the environment.

In neurasthenia the vicious circle or the 'water wheel' mechanism must be broken or rectified, i.e., if one has made a wrong choice of profession and if it is possible he must take to some other profession. But if one has made a wrong choice of wife under the existing social conditions of our country it may not be possible to rectify it but some other depleting mechanism in the form of physical diversions may be substituted.

In anxiety neurosis the sudden charging of the condenser may be diminished by explanation, psychoanalysis, hypno-analysis and narco-analysis, etc., of course, aided by the provision of rest, recreation, sleep, etc. Sometimes merely rectifying faulty notions about certain aspects of life (particularly sexual) leads to a healthy attitude in the subjects.

Whilst rest, physical recreation, sleep and laughter are general methods of treatment the specific methods are analyses and suggestions.

MALARIA AND ITS CONTROL

J. H. ARTHUR, M.B., CH.B., M.B.E., LT.-COL.,
C.M.O., Bhatpara General Hospital,
Jalpaiguri, West Bengal

In the tea districts, the value of paludrine as a means of bringing about a rapid reduction in malaria was quickly realised and it is due mainly to this drug that the incidence of the disease has been reduced. But to continue to control the disease exclusively by paludrine or with any of the present known antimalaria drugs in a static or semi-static population as in the tea estates in the Dooars, is in my opinion neither a sound nor a practical method of dealing with the problem. It is not suggested that the chemotherapeutic drugs should not be used or abandoned completely as a means of control, but they should be reserved and used in special circumstances. In areas where the malaria rates are still high and where the disease is affecting the economical working of industry, or in areas where no antimalarial control scheme has yet been established, mass administration of paludrine on as wide a scale as possible should be carried out, but combined with insecticidal spraying.

One would think that conditions in the tea gardens should nearly approach the ideal for efficient drug prophylactic, but this is not the case, and in support of this statement, attention may be drawn to the results of an investigation on paludrine prophylaxis and co-existing parasitaemia, carried out on eleven gardens in Assam by the Ross Institute, where control was by paludrine only.

In this investigation, carried out between August and November 1951, specimens of urine were collected from 742 adults in eleven estates in widely separated districts, and tested for the presence of paludrine. The visits were made without warning and timed to be not less than twelve hours, or not more than thirty-six hours after the drug had been administered. The prophylactic dose was 100 mg. twice weekly on some gardens, and 300 mg. once weekly on others. The test for the presence of paludrine in the urine was carried out according to the technique described by Gage and Rose.

Of the eleven estates visited, the percentage of positive urines varied between 94 and 101 per cent, while the average for whole group was only 56 per cent positive (in other words out of 742 urines examined, only 413 showed a positive test for paludrine). There was very little variation between the two groups; A regime (300 mg. once weekly) gave a positive finding of 55 per cent, while B regime (100 mg. twice weekly) 57·5 per cent.

In this investigation 37 per cent of all persons showing paludrine in the urine had malaria parasites in the peripheral blood. The parasitic rate in those with negative urine was 44 per cent, and in both groups taken together 40 per cent. *Plasmodium falciparum* occurring alone formed 89·6 per cent of the infections, and *P. vivax* alone or with *P. falciparum* formed 10·4 per cent.

It was found, in this investigation, that on a prophylactic regime of 100 mg. twice a week, the parasitic rate in the urine positive group was significantly lower than in the urine negative group, but the difference in the regime of 300 mg. once weekly was not significant.

The interpretation of the significance of parasitaemia occurring during paludrine prophylaxis is not simple, involving as it does such factors as the possibility of a drug resistant parasite, the effects of immunity, the dosage, the dosage regime, and the efficiency of the administration, but the conclusions reached in the Ross Institute investigation were:

(a) that in this investigation they were dealing with a resistant parasite and

(b) that the parasitaemias resulted from the combined effects of a regime inadequate to afford full casual prophylaxis, and a low standard of efficiency of drug administration.

In this connection it may be mentioned that the 100 mg. biweekly regime is preferable to the single weekly dose of 300 mg., but both regimes are completely useless, unless regular administration is carried out, which as is well known is quite impossible especially in the case of children and infants, and it is for this reason it may be safely concluded that to rely on paludrine or any of the present known anti-malaria drugs as the sole method of control of malaria is wrong.

On many estates the control of malaria over the last few years has been, by a combination of paludrine plus indoor residual insecticidal spraying, and it is on the latter method of control that the following observations are made.

Insecticides

D.D.T. and B.H.C. have now been extensively used in control programmes in this country, and their effectiveness as residual insecticides studied in great detail, both separately and in combination, by the leading malariologists in the country, and now we have answers to many of the questions which have worried us for a long time. As it is known results have been very variable, even from district to district, the causes of which were hitherto obscure. Now it has been established that the persistency of insecticides and their action on mosquitoes is influenced a very great deal by the particle size of the crystals, the type of surface treated and by temperature and humidity.

Of these, by far the most important, as far as we are concerned, is the effect on various types of surfaces. It has been shown that in the case of mud plastered walls and mud bricks there is a rapid absorption, and that surface deposits from aqueous suspensions disappear much more rapidly from mud surfaces than any other surface. This absorption seems to be influenced a great deal by the very nature of the soil used in the construction of houses, even in various parts of the country, and is more apparent in the case of D.D.T. than B.H.C. The rate of disappearance of particles from the surfaces of mud walls decreases as the relative humidity increases. This can explain why in certain parts of India, especially in Northern India, where although temperatures are high, but the humidity is low, 50 mg. D.D.T. has been found to be effective for as long a time as three to four months, while in other parts of the country the persistency only lasts for a month to six weeks, and that is why in Assam Bertram found that control by D.D.T. was not nearly as effective as by B.H.C.

Much has been written about the most suitable and economical dosages of insecticides, and there has been much controversy as to the relative effectiveness of a single massive dose as used by the WHO teams in India. It is likely that when massive doses of D.D.T. are deposited on mud plastered walls, not only does the D.D.T. flake off easily, but it also forms a conglomeration of crystals, which are not satisfactory from a viewpoint of toxicity. Moreover, the choice of dosage depends not only upon the lethal effect of the deposit, but also whether this effect is influenced by human interference. It is common practice in India to replaster the house with mud and cowdung at frequent intervals, thereby rendering ineffective any insecticide deposit. The application of a single massive dose is practised in European countries, and this has been found to be effective even up to six months, but the most expensive item in residual spraying in these countries is the labour, while in India only 30 per cent of the total cost is spent on labour and 70 per cent on materials. The reverse is the case in European countries. It has been found, therefore, much more practical and economical in India to spray D.D.T. at the rate of 50 mg. or B.H.C. at 10 mg. per square foot, and to repeat at shorter intervals.

Most workers in India have come to the conclusion that there is surprisingly little difference in the choice between 50 mg. D.D.T. and 10 mg. B.H.C., both give full protection for about six weeks. Recent work has been carried out at the Malaria Institute of India by using a combined spray of 25 mg. D.D.T. and 5 mg. B.H.C., and it is evident from the data presented that the combined spray is more effective than either D.D.T. or B.H.C. applied singly. It has been found to be effective for eight weeks. As has been said before under local conditions there is little to choose between D.D.T. and B.H.C., and relative costs are the deciding factor. In most of the Government control schemes throughout India, D.D.T. emulsions are used, they are prepared locally by the local malaria control organisation, and are used only in preference to wettable suspension powders because of cheapness. Suspensions are superior in every way to emulsions, absorption is less, and transport much easier; however, the present cost of D.D.T. wettable powders is prohibitive for large scale control schemes, but as soon as good quality suspensions are produced at competitive costs, I have every reason to believe that suspensions will entirely replace emulsions.

B.H.C. in the form of Gammexane P. 520., a wettable suspension powder, is now almost exclusively used in the tea districts as an insecticidal spray, and excellent results have been, obtained. The dose recommended is 10 mg. of the gamma isomer per square foot of surface. To obtain this, 6 ozs. of the powder are mixed with one gallon of water, and applied to the wall surface at the rate of one gallon per 1,000 square square feet.

Equipment and Spraying

Of equipment for antimalaria work, stirrup pumps, though they require two men to operate, are satisfactory in every way, and are much more preferable to knapsack sprayers. It is unreasonable to expect a man with a load on his back to spray thoroughly, which is the essential factor in residual spraying. Attention must be paid to the nozzle aperture of the spraying lance, and it must be between the limits of 1/16 and 1/32 of an inch. Anything larger than 1/16 gives a jet of fluid which runs off the wall, while a nozzle smaller than 1/32, produces globules which tend to bounce off the wall, causing a great drop in efficiency, with a resultant doubt as to the dose applied, apart from the wastage. The rubber hose also should not be more than 12 feet long, as otherwise it hampers the workers.

For large scale spraying operations, a team should consist of 9 men. Two men are employed on each pump, two for carrying water and mixing the solution, and one Sardar supervisor. No more than three pumps should form a team, as more than that is difficult to supervise. All persons in the team should be thoroughly trained in the art of spraying and mixing the solution, so that they can be interchangeable. They should also have a working knowledge of the pumps used, and be able to carry out minor repairs in the field.

Technique of Spraying

I should like to say a few words on the technique of spraying, as results will depend entirely on the efficiency of the application.

Spraying should be carried out extensively and systematically so as to cover the entire area. It is advisable to start spraying at the periphery of the lines, working towards the centre. All human habitation cow

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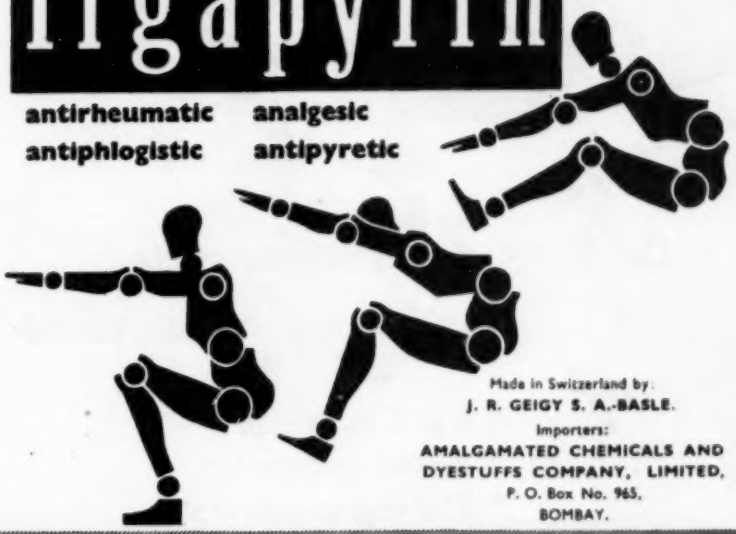

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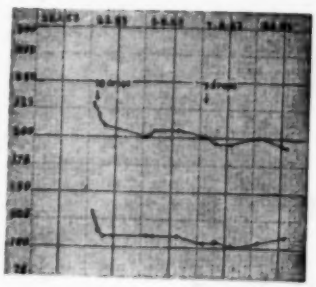

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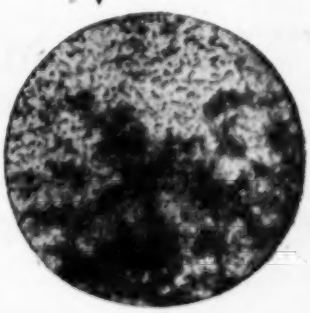
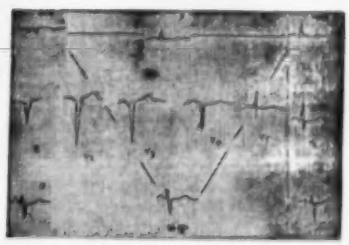


Original study by Crystalline alkaloid first done in India

Ref : Roy Chowdhury & Ghosh
Indian Medical Forum
Vol. IV No. 6. 1953



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houses, firewood sheds, and out-houses in the area must be thoroughly sprayed, if results are to be expected. Spraying of individual rooms or houses will not reduce the mosquito population to any extent, and is a waste of insecticide, as far as malaria control is concerned. Spraying parties should work close together, and not be spread over a wide area, otherwise supervision is not possible. During spraying operations, the man operating the spray lance walks slowly round the room, covering the entire wall surface and ceiling. Particular care should be taken to spray all dark corners, the undersurfaces of tables, beds and *machans*, where mosquitoes are known to rest. The nozzle of the spray lance should be held about 12 inches from the wall, and the solution applied to a point of wetness without any run off.

Experience has shown that one Unit (1 pump) can effectively spray about 30 houses in a working day, the number, however, will depend on the experience of the sprayers. The spray should be thoroughly and carefully applied, even though such spraying considerably prolongs the sprayinng time. The date on which the first, and subsequent rounds of spraying should commence, will depend on the entomological findings in the area. It is, therefore essential that regular mosquito catches should be carried out in suitably placed catching stations to determine the mosquito population. A sustained increase in the number of anopheline mosquitoes is an indication that spraying operations should commence.

This corner of the eastern Dooars had, until a few years ago, the reputation of being one of the most malarious place in India; in fact, Sir Malcom Watson named it the white man's grave of India, because of the prevalence of cerebral malaria and black water fever. An all-out attack on the disease was initiated in 1947 by the combined use of prophylactic paludrine and indoor insecticidal spraying, and it is encouraging to note that the casualties have been reduced to a negligible figure, and the health of the people has improved, the sick rates coming to half.

The insecticides D.D.T. and B.H.C. have revolutionised malaria control, and now made it possible to control areas which were hitherto considered impossible to control, because of the extensive nature of the breeding areas. Much of the failure in the past to control malaria was because the breeding areas were so vast that control by antilarval methods were quite impossible. Further, many of the breeding areas were outside the jurisdiction of the control, and any results which might have been achieved were being nullified by breeding over the boundary of the area under control, yet within the half mile limit necessary for complete protection. Before closing it may be said that central measures must have continuous process and any cessation of these, would result in the re-appearance of the devastating state of affairs experienced in the past.

CASE NOTES

A UNIQUE CASE OF HISTOPLASMOSIS

G. PANJA, M.B.(CAL.), D.BACT.(LOND.), F.N.I., F.D.S.(LOND.),

Late Professor, School of Tropical Medicine,

AND

S. SEN, M.B., D.T.M.(CAL.),

Offg. Professor of Protozoology, School of Tropical Medicine, Calcutta

A rare and unique case of histoplasmosis in man associated with cutaneous, mucocutaneous and mucomembranous involvement was seen, and a brief preliminary report of the same is being recorded as the first case of its kind in India. Cases of histoplasmosis have been reported from South America, United States, England, the Philippines and South Africa but none from India. The general clinical features, the aetiological agent, the tissue reaction to the infection and the histopathology of the different lesions closely resemble those that are encountered in visceral and dermal leishmaniasis. It is perhaps for the resemblance of both the aetiological agent and the general clinical picture of this infection with those of visceral and dermal leishmaniasis in man, and also for the lack of awareness of such an infection in India, that its identification has not been possible so far. The report illustrates the need for caution in diagnosis, for such cases may be mistaken for those caused by leishmania infection.

The patient was a Hindu male, aged 48, a resident of suburb of Calcutta. His occupation consisted of supervision of his small iron and steel foundry. The attending physician suspected the case to be one of dermal leishmaniasis, as the report that was presented to us by the physician showed numerous L.D. bodies in the lesions. We doubted the diagnosis and hence prepared films from the lesions and found reticuloendothelial cells simply packed with parasites which were not L.D. bodies but very similar to Histoplasma capsulatum (Darling, 1906, 1908, 1909), Cryptococcus (Castellani and Chalmers, 1910).

The patient was very ill and run down in health and was suffering for about a year. He had lesions on the tongue, angles of the mouth, lips, chin, scalp, neck, armpits, groins, abdomen, etc., i.e., almost throughout the whole body surface. The lesions consisted of small fleshy tumours of the size of a pea or almond, soft to the touch and some were pedunculated, some crateriform ulcers were also present and these were due to breaking down of the tumours. The lesions on the tongue and angles of the mouth were a little hard in consistency and liable to bleed. The submaxillary glands on both sides were enlarged and hard. This led to the suspicion of superimposed malignancy. Some lesions on the lip were cup-shaped and slightly pedicled. Later the glands in the neck suppurated and a thick creamy pus was aspirated. The pus was crammed with intracellular parasites. Some fluctuating flat swellings on the abdomen containing pus were also present, showing parasites. In spite of the lesions on the tongue and lips, the patient

had little difficulty in taking food and in articulation. The spleen was moderately hard and enlarged upto six inches below the costal margin. The liver was also enlarged, two fingers below the costal margin. The patient was very much debilitated and was running a temperature from 102 to 103°F. On clinical examination, no abnormality was found in the heart and the lungs. Blood: W.B.C.—6200; R.B.C.—2,85,000; Hb.—55 per cent; polymorph.—72 per cent; lympho.—25 per cent; mono.—2 per cent; eosino—1 per cent. Serum tests for kala-azar (aldehyde and antimony tests) were reported to be positive before but now all the tests including the complement fixation test were found negative. W.R. and Kahn test of blood were negative. Urine showed no abnormality. A film examination from all the types of lesions and aspirated pus stained by Leishman's showed numerous ovoid organisms 1-5μ, mostly intracellular within the large hyaline mononuclear leucocytes, either diffusely stained all throughout the body or stained peripherally at one end but no linear-shaped kinotoplast of L.D. bodies was seen. Parasites were found here and there over the nucleus of the hyaline monocytes. Some monocytes though they did not show parasites showed vacuolations in the cytoplasm, probably representing the immature stages of the parasites. Some parasites were found to be surrounded by a clear halo, simulating a capsule. Peripheral blood film also showed scanty parasites within the large mononuclear cells. No acid-fast bacilli were seen in the films. Section showed thinning of the horny layer of epidermis and moderate acanthosis. Dermis was enormously hypertrophied showing extensive infiltration of large monocular cells packed with the parasites. In some cells, nucleus was also invaded by the parasites. Congestion, dilatation of lymph spaces and scanty fibrosis were present. No giant cells were seen. Cultures were put up on blood agar, glucose agar, Sabouraud's maltose agar and glucose broth. An organism of fungal nature has been isolated in pure culture from the pus and is being studied. Different species of laboratory animals were inoculated intraperitoneally with saline suspension of the purulent material but positive results have not yet been obtained.

DIFFERENTIAL DIAGNOSIS: 1. Cryptococcosis caused by *Cryptococcus hominis, neoformans*, otherwise called *Torula histolytica*. This organism chiefly attacks the central nervous system and meninges giving rise to headache, stiffness of back and vomiting and cutaneous lesions are only occasional. The organism always shows a wide capsule and due to the over-abundance of such capsular material, the exudate from the lesions tends to be gelatinous and pus-formation is infrequent. Budding is always single when present. Giant cells are present in tissue sections. In this case of histoplasmosis, no wide and typical capsule around the organism was seen. The organism was mainly intracellular. Other signs and symptoms as above were absent.

2. *Blastomycosis*—Clinically there are miliary abscesses at the margin of the lesions. None was found in the present case. The organism shows either single or characteristically multiple budding forms and thick-walled double-contoured body without any capsule. It is not intracellular. Giant cells are present. In the present case the above conditions were absent.

3. *Coccidioidal granuloma* caused by *Coccidioides immitis*—The organism shows 6 to 20 endosporulation and giant cells are present in the tissue sections. In our case no endospores and giant cells were seen.

4. *Dermal Leishmaniasis*—In this disease, besides the granuloma, hypopigmented reddish spots on the face, neck, axillary folds and other parts of the body are usually present. In the films made from the lesions of dermal leishmaniasis the R.E. cells are never found so densely packed with the parasites as in histoplasmosis and linear-shaped kinetoplast is always seen inside the parasites. Capsule-like structure is never found.

There are sufficient diagnostic points for the diagnosis of histoplasmosis in this case in spite of the absence of any definite finding in culture and animal experimentation. Cutaneous lesions are prominent features. The organism is mostly and characteristically intracellular and does not show the linear-shaped kinetoplast of Leishmania Donovani. It does not also show capsule or budding or double-contoured periphery. Giant cells are absent. Pus is creamy and non-gelatinous. Iodide by mouth was useless in this case.

TREATMENT: The lesions were painted with 1 per cent silver nitrate and vioform cream was applied; iodides, arsenic in the form of N.A.B. with glucose intravenously and later sulphadiazine were given by mouth. General tonics were also given. ACTH was tried. Antimony was administered again in the form of intramuscular stibatin (Glaxo) and liver extract with iron was given by mouth. But all these lines of treatment were of no avail. Finally the patient died of exhaustion and heart failure.

SUMMARY

A case of histoplasmosis is described for the first time in India. The skin as well as the viscera are involved in this case. Microscopical examination and biopsy reveal typical intracellular parasites. Treatment with iodides, arsenic, antimony, sulphonamides, liver extract and ACTH were of no avail.

ACKNOWLEDGMENT

The authors are indebted to Dr. N. Das of the University College of Science, Calcuttta, for the microphotography.

REFERENCES

Manual of Clinical Mycology, Med. Depart., U. S. Navy, 1945.

DARLING, S. T.—*J.A.M.A.*, **46**: 1283, 1906.

DARLING, S. T.—*Arch. Int. Med.*, **11**: 515, 1908.

H. RIVOLTA, S.—Torino, p. 246, 1863.

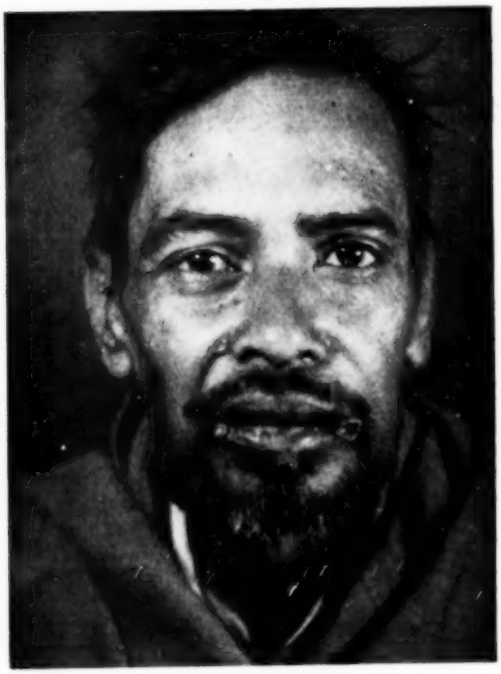

Fig. 1—A case of histoplasmosis showing lesions on the lips, angles of the mouth and nose.

Fig. 2—Case of histoplasmosis showing abscesses on the abdominal wall and nodular lesions on groins and thighs.

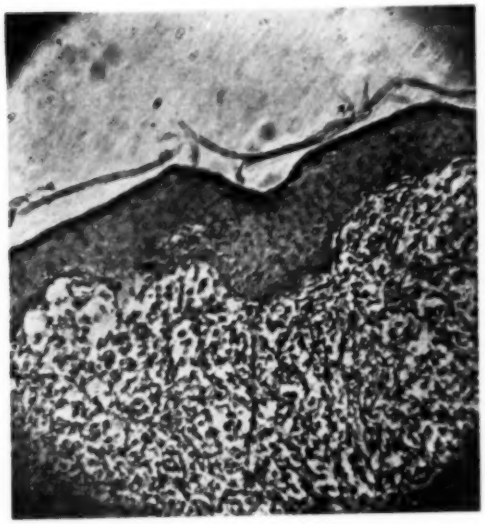

Fig. 3—Section of tissue of histoplasmosis showing extensive infiltration of the dermis with histiocytes and dilatation of lymph spaces.

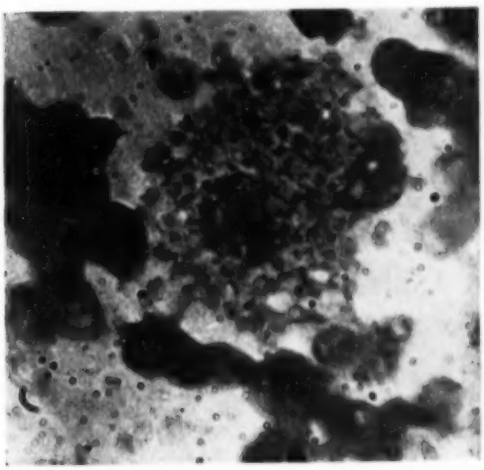

Fig. 4—Film preparation, stained with Leishman's, under 1/12 objective, shows intracellular parasites—histoplasma capsulatum.

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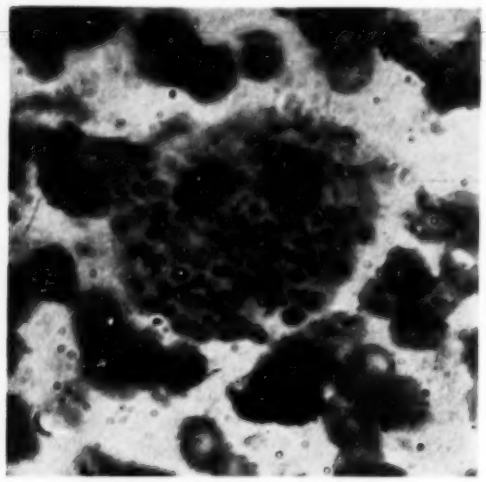

Fig. 5—Film preparation stained by Leishman's showing a histiocyte packed with histoplasma capsulatum.

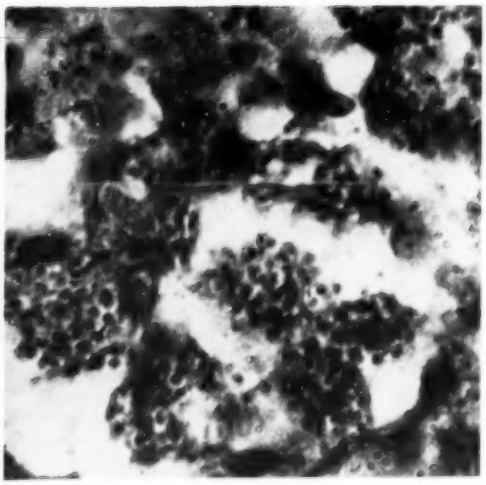

Fig. 6—Section of tissue of histoplasmosis, stained with Leishman's. R. E. cells are seen packed with the parasites.

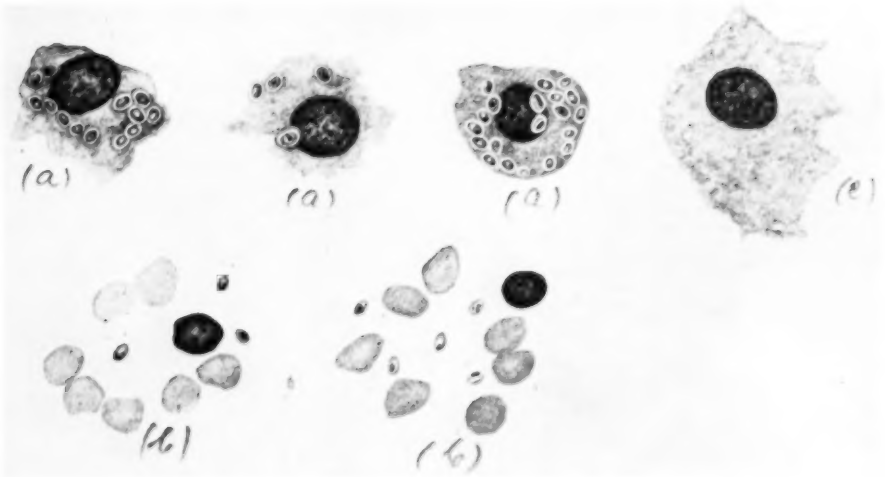

Fig. 7—Camera lucida drawing—smear from the edge of a lesion, Leishman's stain: (a) Mononuclear cells containing parasites simulating L. D. bodies. The parasites differ from Leishmania parasites by the absence of kinetoclast and presence of clear halo. (b) Extracellular parasites. (c) An enlarged monocyte showing vacuolations within the cytoplasm.

CHLOROQUINE IN AMOEBIC HEPATITIS

(with a report of 14 cases)

R. C. BHATTACHARYA, M.B.B.S., L.T.M.(CAL.), L.G.O.(MADRAS),

House Surgeon, Calcutta Police Hospital, Calcutta

Twelve cases of hepatitis (mostly amoebic) and two cases of giardiasis were treated by chloroquine sulphate* in the Calcutta Police Hospital with good result. It has been observed that emetine may be replaced by chloroquine sulphate in the treatment of tropical hepatitis. The results of the fourteen cases with clinical data have been shown in Table 1.

The cases under review will show that chloroquine helps normalising the temperature 24-48 hours after the drug has been used (i.e. after 600 to 1200 mg. taking one tablet of 200 mg. thrice a day). Its action on the liver seems to be appreciated at the end of 5 days when the congestion begins to diminish and the hepatic pain subsides, and the enlargement of the liver begins to recede.

Case 2 (Table 1) was first treated with emetine hydrochlor (grain one daily for 5 days by intramuscular injection) and then with emetine bismuth iodide (grain 1 T.D.S. for 7 days orally) but the patient was not fully relieved of the symptoms. The patient was not allowed to take any medicine for 48 hours and chloroquine sulphate (one tablet of 200 mg. T.D.S. for 5 days) was administered when symptoms subsided 5 days after the use of the drug. In two other cases (Case 7 and Case 12) only emetine hydrochlor (grain 1 daily intramuscular injection for 6 days in each case) was given with no satisfactory result. Chloroquine sulphate was administered orally in both the cases and the doses were one tablet T.D.S. for 5 days, i.e. 600 mg. a day divided in 3 doses, the total being 3,000 mg. in each case. Thus the patients were free from all the symptoms.

Of the 14 cases, two were cases of giardiasis as confirmed by stool examinations. Both the cases were tried with the drug. Stool examinations after completion of the treatment gave negative results showing that the drug had probably a therapeutic effect in giardiasis. The doses in each case were one tablet of 200 mg. T.D.S. for 5 days.

The analysis of the results obtained in the cases shows that chloroquine has a definite action in amoebic hepatitis and it also works more rapidly than emetine. This drug may also act on intestinal flagellates. Further, it may be observed that chloroquine may be useful in cases of intestinal amoebiasis where there is definite tenderness in the caecum. In four cases (Cases 1, 6, 7 and 9) there was definite tenderness in the caecal region in each case but this tenderness disappeared after completion of the course of treatment. The drug may also be helpful in cases of pulmonary amoebiasis (Cases 3, 8 and 9) and in the case of a threatening liver abscess. In one case it was clinically diagnosed and the patient was treated with the drug with satisfactory results (Case 4). Subramanian (*Indian M. Gaz.*, **87**: 295, 1952) of the Government Stanley Hospital, Madras, reported successful results of some cases with the treatment of 'Resorchin'.

Chloroquine in spite of its effectiveness has got some drawbacks. Out of fourteen cases the side-effects were observed in 6 cases only. There were pruritus and rashes in one case (Case 3), burning sensation in the stomach and flushed face (Case 6), anorexia and vomiting (Case 7), burning sensation in the stomach (Case 10), vertigo, giddiness and anorexia (Case 11) and burning sensation and giddiness (Case 12). The side-effects as observed in Case 7 was probably due to idiosyncrasy. In Case 11, the patient took two tablets at a time at an interval of two hours, that is, 4 tablets a day through mistake on the 5th day of the treatment and thus had vertigo, giddiness and anorexia. In three cases only the patients complained of scanty micturition during the course.

The side-symptoms in all the six cases subsided gradually after stopping the course of treatment and by taking large quantities of plain water only.

It is better that this drug should be used with slight close observation and it is to be discontinued if the side-effects become marked and persistent. It is perhaps advisable to use chloroquine after food and the patient is to be advised to take plenty of water during the course of treatment to avoid its toxicity.

The object of the article is to point out that chloroquine has a greater advantage over emetine in amoebiasis. The comparative value of each drug is shown in Table 2.

Chloroquine sulphate though it may be used as injection (5 c.c. containing 40 mg. of chloroquine base in each c.c.) was administered orally in these fourteen cases in tablets of 200 mg. each containing the equivalent of 150 mg. of chloroquine base.

So far we used emetine in case of tropical hepatitis (amoebiasis) but chloroquine sulphate may now be tried instead when it has perhaps got more rapid action and is more effective. The drug is successful in intestinal amoebiasis also where emetine has little action. As emetine has to be administered intramuscularly, it requires daily attendance of the doctor and therefore it becomes more expensive. The administration of emetine requires proper rest while that of chloroquine does not.

*The brand of chloroquine sulphate used in this study was Nivaquine (M. & B.).

TABLE 1—SHOWING CLINICAL AND LABORATORY FINDINGS AND RESULTS OF TREATMENT OF AMOEBIC HEPATITIS WITH CHLOROQUINE SULPHATE INSTEAD OF EMETINE HYDROCHLORIDE

[13 cases were observed and treated in the Calcutta Police Hospital. Only 1 case (Case 12) was an out-patient]

Serial No.	Name, age in years and sex	Past history	Date of admission	Total No. of days in the hospital	CLINICAL DATA BEFORE USING CHLOROQUINE SULPHATE: No. of days in hospital	Clinical features	Treatment if any	LABORATORY FINDINGS: Blood	Stool	Urine	USE OF CHLOROQUINE SULPHATE: Progress of the case	Doses used (orally)	Side effects marked, if any	Remarks
1	M. D., 27, M.	Dysentery	21-9-52	21	13	General constipation; Temp. --102°-100° for 6 days 99°-99°·5 for 8 days Spleen +, liver + and tender Caecum—thick and tender, Evening rise of T.	Quinine and paludrine. No medicine for a week except Mist. Alba used before chloroquine	W.B.C.—5,000: Poly—64, Lympho—30, Mono—4, Eosino—2, % M.P.—nil. AT & CT—negative	Examined consecutively for 3 days—nothing abnormal excepting a few pus cells	N.A.D.	No evening rise of temp. 24 hrs. after using the drug. Liver not palpable on the 4th day and caecum not tender. 6th day no complaints	200 mg. T.D.S. for 5 days Total: 3,000 mg.	nil	Evening rise of temperature was due to hepatitis. The patient was completely cured
2	S.M., 40, M.	Dysentery and backache	30-9-52	21	15	Persistent dull pain hepatic region, acidity, constipation, backache, bleeding piles. Liver + +, tender, Rt. intercostal space (6th-8th) tender. Tenderness T. 7 Temp. normal. X-ray spine normal, diaphragm slightly raised	For the first five days Emetine 1 daily; next 7 days E.B.I.—T.D.S. gr. 1 Sometimes Atropine used for pain. Left without medicine for 48 hrs. before chloroquine	W.B.C.—5,626: Poly—54, Lympho—34 Mono—1, Eosino—6, %	Examined consecutively for 4 days—nothing abnormal detected	N.A.D. -excepting triple phosphate	48 hrs. after continuing the drug, backache much less, and liver just palpable and less tender. After-4 days patient feeling quite fit. Liver not palpable	do.	nil	Emetine and E.B.I. used but patient still complaining backache, heaviness on the rt. side. Liver palpable and tender. Chloroquine gave satisfactory result, more rapid action

3	P.S., 25, M.	Dysentery	30-9-52	23	15	Fever and cough. Temp.—101°-2° F. for 4 days; 98°-4-101° F. for 3 days; 98°-4-99° for 4 days which continued. Pain rt. chest on deep inspiration and cough. Spleen +, Liver + and tender. Breath sound—diminished rt. side	Quinine and quinacrine for 7 days; then alkaline mixture only for 4 days till chloroquine used	WBC—6562: Poly—39, Lympho—59, Mono—2, Eosino—2, % MP—nil, AT & CT—negative, Widal test—negative	Protozoa ova and cyst—none found	NAD	After 48 hrs. the temp. normal. After 72 hrs.—cough and pain chest diminished. 7th day: lungs free. liver not palpable, not tender	200 mg. TDS for 7 days. Total: 4,200 mg.	Pruritus, rashes observed after 72 hrs. These continued till the drug used but gradually subsided after stopping of the medicine	In spite of antimalarial treatment there was persisting slow rise of temperature due to hepatitis Chloroquine sulphate cured the patient though side effects marked
4	S.D., 24, M.	Amoebiasis	10-10-52	8	2	Pain chest, cough, heaviness on rt. chest; abdominal discomfort. Liver + +, very tender. Rt. interspace (5th-8th) tender.	Only mist. alba for 48 hrs.	WBC—10000: Poly—82, Lympho—16, Eosino—2, %	NAD	—	After 48 hrs. the patient progressing well. On the 4th day the patient felt alright. Bowels regular	200 mg. TDS for 5 days	nil	Clinically a case of threatening liver abscess Chloroquine used as a trial in place of emetine injection and produced very good result
5	N.J., 27, M.	Nothing particular	17-10-52	9	5	Headache, epistaxis, vertigo. B.P.—139/90. Liver 1" enlarged, very tender. Nasal mucosa congested. No fever	Sedative and vitamin B complex	—	NAD	NAD	After 48 hrs. the patient feels better. The liver is palpable and less tender. Gradually improved	do.	nil	The complications were due to amoebic hepatitis Cured by chloroquine sulphate

Serial No.	Name, age in years and sex	Past history	Date of admission	CLINICAL DATA BEFORE USING CHLOROQUINE SULPHATE				LABORATORY FINDINGS			USE OF CHLOROQUINE SULPHATE			Remarks
				Total No. of days in the hospital	No. of days in hospital	Clinical features	Treatment if any	Blood	Stool	Urine	Progress of the case	Doses used (orally)	Side effects marked, if any	
6	S.N., 26, M.	Dysentery	17-10-52	13	5	Temp — 102° F. for 3 days; later on slow rise by evening; liver $\frac{1}{2}$" enlarged; caecum thick and tender	Mist. alkali and kept under observation	W.B.C.: 8000; Poly—86 Lympho—21, Eosino—3, %	E. H. cyst present	Albumin —trace	No. temp. after 24 hrs. Pain less at the lower border of rt. costal margin but more on rt. 2nd intercostal space. Fit on 6th day	200 mg. TDS for 8 days	Burning sensation in the stomach; flushed face; these subsided after the course and by taking plenty of plain water	Pain gradually rising from below upwards disappeared after the course
7	P.T., 42, M.	Amoebiasis	17-10-52	12	7	Colitis; stool mixed with blood and mucus; liver $\frac{1}{2}$" enlarged, tender and caecum tender	Emetine gr. 1 daily for 6 days	—	E.H. vegetative form—present	NAD	After 72 hrs. of the drug he felt better and almost normal on the 5th day	200 mg. TDS for 5 days	Anorexia and bile stained vomiting	Emetine gave partial relief. Liver and caecum remained stationary Subsided with chloroquine
8	G S., 38, M.	Malaria	21-10-52	6	1	Breathing difficulty; cough; pain chest, febrile; liver 1" enlarged, very tender, Rt. intercostal spaces tender; crepitation rt. lung base, no rise of T.	Nil	—	—	—	After 48 hrs. felt better with less cough; after 72 hrs. the breath sound clear and on the 5th day he felt perfectly normal and fit to resume duties	do.	nil	Lung findings due to hepatitis and all complications subsided on the 4th day

9	K.C., 19,M.	Nothing particular	21-10-52	11	5	Cough and pain chest; liver ½" enlarged and tender; rhonchi both sides of chest; x-ray—nothing suggestive; no fever; sputum—A.F.B. negative	Sulphadiazine and mist. asthmatica	W.B.C.—5,400: Poly—68, Lympho—26, Mono—2, Eosino—2, % ESR—40 mm.	NAD	—	Lungs showed much improvement after 72 hrs.; liver not palpable on 5th day; caecum and liver not tender	do.	nil	Lung troubles due to hepatitis(?) Sulphadiazine not of much help but chloroquine was. Re-admitted for chronic bronchitis. This time no liver troubles. Cured.
10	Md.J.,19,M.	Nothing particular	24-10-52	6	x	Constipation acidity. Liver 1½" enlarged, painful. Pain on pressing rt. side of ribs. No T.	nil	—	—	—	Gastric troubles subsided after 72 hrs. On the 5th day liver was just palpable but not tender	do.	Burning sensation in the stomach	Gastric troubles mainly due to chronic amoebiasis partially subsided; liver +, not tender
11	P.C., 35, M.	do.	24-10-52	7	2	Indigestion, constipation. Liver—palpable and tender	Only mist. alba	W.B.C.—6000: Poly—56, Lympho—40, Mono—1, Eosino—3, %	Giardia intestinalis + +, pus cells +	NAD	Liver not palpable and not tender on the 4th day; bowels regular and no other complaints	do.	4 tabs. on last day within 2 hrs. through mistake caused vertigo, anorexia	It was a case of giardiasis; chloroquine given as a trial Stool after the course—negative
12	D.D., 28, M.	Colitis	(An outpatient)			Pain abdomen, acidity, constipation, feverish, liver +, tender	Emetine gr. 1 for 6 days	—	E. H.—vegetative and cystic forms present	—	After the full course the liver not palpable and not tender	do.	Burning and giddiness	Emetine did not fully relieve symptoms but chloroquine did

SUMMARY

1. Fourteen cases of tropical hepatitis and giardiasis treated with chloroquine sulphate (orally administered) are reported.

2. Emphasis is given to chloroquine sulphate in place of emetine in the treatment of tropical hepatitis.

3. Side-effects of the drug have been noted to be almost negligible when compared with those of emetine.

ACKNOWLEDGMENT

The writer is obliged to Major K. P. Mukherjee, Police Surgeon, Calcutta Police Hospital, for permission to publish the case reports. He also wishes to express his gratefulness to the department of Pathology of the Hospital and also to Dr. S. Sinha for encouraging him to publish the case reports.

ADDENDUM: Two other cases in the hospital were treated with chloroquine sulphate but the records were not available for tabulation. One case had daily evening rise of temperature, the liver was enlarged and tender. He was treated with quinine, calcium, etc. for about a week with no result. Later on chloroquine sulphate was started. The temperature came to normal after 48 hours and he was relieved of his troubles on the 5th day. The other case was one of giardiasis and chronic amoebiasis (stool showed giardia intestinalis and E. H. cysts) with the liver enlarged and tender. He had acidity, constipation and epigastric pain. Choloroquine sulphate relieved him.

Table 2—SHOWING COMPARATIVE VALUE OF EMETINE AND CHLOROQUINE

Name of the drug	*Mode of use*	*Effectiveness*	*Special care suggested*	*Toxicity*	*Remarks*
Emetine Hydrochloride	Intramuscular injection	In vegetative form of E.H.	Absolute rest	Cardiac depression causing fall of blood pressure and so cardiac failure	Very painful, sometimes produces local abscess due to tissue necrosis; sometimes cardiac tonic required entailing extra cost
Chloroquine sulphate	Orally (in these cases)	In vegetative and cystic forms of E.H.	No such rest required	No such toxicity	Has very little side-effects; needs very slight caution. Action more rapid

The Founder-Secretaries of the Indian Medical Association

LATE DR. K. S. RAY

LATE DR. A. N. GHOSH

DR. D. D. SATHAYE

The I. M. A. formed in 1928 had as its Founder-Secretaries Dr. K. S. Ray and Dr. A. N. Ghosh of Calcutta and Dr. D. D. Sathaye of Bombay. These three jointly nurtured the Association in its infancy (1928-32). Dr. K. S. Ray however continued as Jt. Hony. Secretary till 1937 and thereafter as Hon. General Secretary till 1940 following which he had the distinction of being elected President of the Association for two successive sessions (1940-41 and 1941-42). He was also the Editor, Journal of the I. M. A. during 1941-42 to 1949-50 and died in harness in October 1950. The services rendered by Dr. A. N. Ghosh to the I. M. A. is likewise immense. As Secretary-in-charge he shouldered the responsibility of publishing the Association Journal from since its inception in 1930 up to 1934 by which time the Journal was already on a sound footing. His devotion to the cause of the I. M. A. later won him the positions of the President of the Bengal Provincial Branch and Vice-President of the All-India organisation. Dr. D. D. Sathaye was one of the pioneers in the cause of the Association and worked strenuously for the unity and uplift of the profession. He served the Association as one of the Jt. Hony. Secretaries uninterruptedly till 1934 and contributed in a large measure to the growth of the Association particularly in Bombay side. Of the three, Dr. Sathaye is alive and though ripened in age is very active. Even in his eightieth year he is conducting the Mahatma Gandhi Free Eye Hospital, Poona, as an ophthalmic surgeon.

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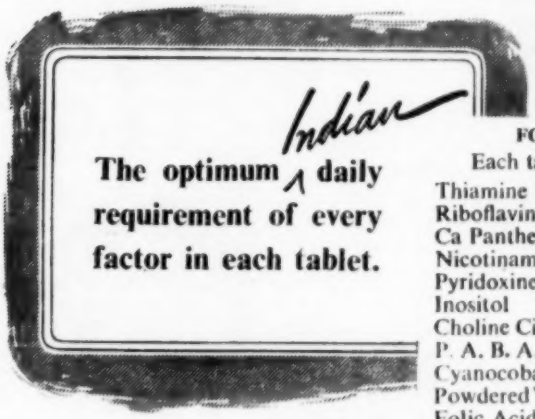

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JOURNAL OF THE

INDIAN MEDICAL ASSOCIATION

CALCUTTA, MARCH, 1954

PHARMACEUTICAL INDUSTRY IN INDIA

The Pharmaceutical Enquiry Committee appointed by the Government of India have probably by this time collected a lot of facts and figures that have been placed before them by the representatives of the drugs and pharmaceutical industry. There are always before such committees, grievances, complaints about difficulties, appeals for special protections and preferential treatments. Before they expect any concessions and help from the government, we would like to ask the people who look after the industry whether so long and so far they have managed the industry to the best of their abilities? Whether they have done all that is expected from them? The Indian Drugs Act (1940) lays down rules and regulations to guide the manufacturers. If the manufacturers followed the recommendations and directions *in toto* we are of opinion, they would not be in the difficult position they are to-day. Before asking for more concessions, the Indian drug industry must create a prestige for itself and command the confidence of the medical profession. We have been warning the industrialists for a long time, appealing to them to broaden their outlook, and the time has now come when they have to take a serious decision if they want to survive in the struggle for existence. It cannot be denied that in the majority of cases the manufacturing concerns are working under conditions of "insufficient accommodation, inefficient personnel, inadequate appliances and improper control". These are certainly not problems that could be tackled by the Pharmaceutical Enquiry Committee. The overhauling and corrections must come from within. The author of the article, The Present Condition of Pharmaceutical Industry in India, which appears in the current issue, has suggested certain measures after a careful study of the manufacturing system in the United States of America. We fully endorse his views and agree that licence for manufacture should be issued after careful scrutiny of (1) buildings, floor space and environments, and (2) personnel, equipment and appliances. Permission to manufacture parenteral preparations should be given after rigid inspection and after satisfaction that all conditions are properly fulfilled.

We agree the weeds and mushrooms in the industry must go. The Pharmaceutical Enquiry Committee evidently did not get a chance to see any such establishment; the representatives of that class of manufacturers will never come out of the backyards and face the Committee, they are aware of their guilt. They need no help and protection, it is not the pharmaceutical industry they represent, they are only a section of traders carrying on a trade on unstandardized and unethical preparations. We are sure the drug control machinery of the different States will remain vigilant and ruthlessly destroy these undesirable elements.

The foreign investors in India should also change their outlook. They should not be "mere packers" but initiate full-scale manufacture. Unless they do this, the earlier the better, we will have grave doubts about their intentions. We hope they will fulfil our expectations.

MEDICOLEGAL INSTITUTE

In an article published in the January issue Dr. I. B. Rao[1] discussed the question of starting medicolegal institutes in India. There are organisations of similar nature in different western countries but so far not much progress has been made in developing study of forensic medicine in this country. It must be said that the vast forensic resources of our country and knowledge accruing therefrom should be utilised to equip the future entrants to the medical profession with scientific details as regards conditions that obtain all over the country to develop this branch of medical science.

Medicolegal work in India is much more complicated and rather difficult compared to that in western countries because of rapid decomposition of cadavers in the hot and humid climatic conditions. The social customs that prevail here also help in the early disposal of the dead bodies either by cremation or burial. This no less complicates the issue in determining the causes of death in many cases.

It is high time that a well-equipped medicolegal institute is set up in each State wherever there is a medical college. The institute should have all branches of forensic medicine included for study and research with a well-equipped laboratory for undertaking various processes to arrive at a definite standardisation on Indian materials. It is felt that the many relevant factors which vary considerably in Indian conditions from what is noticed in western countries will throw much light on this branch of medicine and our students would be in a position to form definite and conclusive ideas on many factors that operate in our country and will be able when they come up to the standard to give authoritative opinion on many vexed questions.

Last year the Government of West Bengal started a Forensic Laboratory in the Medical College, Calcutta, and appointed a Director who is a chemist of very high repute to look after and develop the same. In any case, it must be said that here at least a beginning has been made and let us hope other States will also think over the matter and find out ways and means to develop study in this branch of medical science on rational principles.

1. *J. Indian M. A.*—**23**: 157, 1954.

CURRENT MEDICAL LITERATURE

Cat Scratch Disease; Nonbacterial Regional Lymphadenitis

Daniels and MacMurray (*Ann. Int. Med.*, **27**: 697, 1952) write that cat scratch disease in its most typical form begins with the development of an initial skin lesion a few days following a cat scratch. Rarely there is some other mode of inoculation into the skin. About three weeks later striking enlargement of the regional lymph nodes develops. There may be local redness and tenderness, or the nodes may be virtually insensitive. Fever and systemic symptoms are usually present. The nodes may gradually recede without treatment or proceed to suppuration with the development of pus, sterile on all culture media.

A series of 60 cases of cat scratch disease from widespread areas in the country has been reported. The entity classically consists of regional lymph adenitis with or without the formation of sterile pus following cat scratch and an initial lesion on the skin. The initial lesion may assume a variety of forms and is present in almost half of the cases. Suppuration with sterile pus occurred in about one-third of the patients. Rarely there is no history of cat contact. The disease may simulate any of the wide variety of neoplastic or inflammatory diseases involving regional lymph nodes. The axillary nodes are the most frequent of the regional nodes to be involved, but a cervical form is common. The majority of the patients have a short, mild illness with fever and systemic symptoms, but indolent or suppurative node involvement may persist for months. There is a specific intradermal test. The nodes have a characteristic though not diagnostic microscopic pattern. Present evidence suggests that the disease may be due to a virus related to the lymphogranuloma-psittacosis group.

Unusual Physical Findings in Pleural Effusion

Mernstein and White (*Ann. Int. Med.*, **27**: 733, 1952) write that the diagnosis of pleural effusion on physical examination has been based on the classic findings of absent tactile fremitus, dullness or flatness to percussion, and absent breath sounds. That the presence of increased breath sounds to the point of bronchial breathing and increased voice sounds can be associated with pleural effusions is not well known. The more modern texts make only passing reference to these 'unusual' phenomena the emphasis being placed on the more typical signs.

Further study was undertaken to determine why a pleural effusion should yield finding resembling other disease entities. It was postulated that the fluid exerted pressure in these cases and caused parenchymal compression. Manometric studies were performed on 17 cases of pleural effusion to determine the pressure contained in the fluid. An attempt was made to correlate the pressures with the physical findings. In all eight of those with constant positive pressures throughout all phases of the respiratory cycle, "unusual" findings of bronchophony, tubular or amphoric breath sounds and even whispered pectoriloquy were noted. The aetiology of all the effusions in this series was either cardiac decompensation or carcinoma. However, this is probably because these are more apt to be larger effusions which have developed rapidly. Absolute pressure does not appear to be significant, but only that some degree of positive pressure is produced and held. This pressure must be sufficient to compress parenchymal tissue down to bronchi of sufficient size to produce these auscultatory findings.

By more meticulous interpretation of physical signs, pleural effusions can be diagnosed in the presence of bronchophony, tubular or amphoric breath sounds and even whispered pectoriloquy over an area of dullness to percussion.

Manometric readings of pleural fluid have been presented in cases with usual and "unusual" findings. It is demonstrated that the "unusual" findings are caused by compression of lung parenchyma by fluid.

The absolute pressure is not important; only that the pressure is positive throughout the respiratory cycle.

Oral Diuretics

An oral diuretic that was as effective and safe as the parenteral mercurial preparations would save much time and money. For ten years now various organic preparations of mercury have been given orally, but there is a risk of fatal poisoning, and toxic effects occur in up to 50 per cent of patients. The most favourable report to date is that of Dimitroff *et al* (*Circulation*, **7**: 380, 1953) who used an experimental organic preparation containing 10 mg. of mercury in each enteric-coated tablet. The drug was given in divided doses to a total of 60 to 100 mg. of mercury per week. Of 35 ambulant patients with chronic congestive heart-failure, 6 (17 per cent) became intolerant to the drug, and had cramp-like abdominal pain, nausea, vomiting, diarrhoea, or an unpleasant taste in the mouth. But in the remainder the drug replaced intramuscular 'Mercuhydrin' quite effectively for periods up to eleven months. The authors stress that oral preparations are only useful in maintenance therapy when the acute phase of congestive heart-failure has been successfully treated by injected mercurials.

Since a good number of physicians are probably still sceptical about the usefulness of oral mercurials, it is encouraging to see other fields are being skilfully explored. One of the most promising lines of study seems to be that of carbonic-anhydrase inhibitors. These agents impair renal tubular excretion of hydrogen ions and reabsorption of sodium and potassium ions. The sulphonamide group of drugs are mild carbonic-anhydrase inhibitors, and in fact Schwartz (*New Engl. J. Med.*, **240**: 173, 1949) has used sulphanilamide as a diuretic. The search for less toxic and more potent agents has now progressed further, and a likely drug is "compound 6063" (2-acetylamino-1, 3, 4-thiadiazole-5-sulphonamide), known as 'Diomax'. This is the preparation used by Berliner *et al* (*Am. J. Med.*, **11**: 274, 1951) in their study of the relation between urinary acidification and potassium metabolism. Friedberg *et al* (*New Engl. J. Med.*, **240**: 883, 1953) have lately described a clinical trial of this drug in patients with congestive heart-failure Two series of patients were studied: 11 patients who required hospital treatment for uncontrolled congestive heart-failure; and 15 patients who had survived an acute episode and were able to get about on maintenance treatment. In all patients, diomax replaced parenteral mercury as a diuretic, supplementing other measures, such as rest or graded exercise, digitalis, and sodium restriction. The trial was was not very strictly controlled, but the data suggest that diomax may have considerable clinical usefulness. In 9 of the 11 hospital patients clinical response to diomax was satisfactory, but the remaining 2 patients had to have parenteral mercurials. In 9 of the 15 ambulant patients diomax could

be satisfactorily substituted for mercurial injections, but the other 6 patients had to return to injections. The most effective dosage of diomax was 250 to 750 mg. orally every eight hours for two to three days, during which time the excretion of water, sodium, and potassium rose and then gradually diminished to control levels. An interval of forty-eight hours or more was then required before a further diuretic response to diomax could be obtained. Alternatively, the drug could be given once daily in 250 mg. doses without tolerance developing. Mild acidosis occurred during treatment, but this did not seem to have any appreciable connection with the sodium and water loss. Only minor side-effects were encountered, the chief being drowsiness, lassitude, and paraesthesiae in the digits, but they were never bad enough to warrant stopping the drug. The only significant changes in blood chemistry were a fall in plasma carbon dioxide content and a slight fall in pH. In those patients who did not respond to diomax, it was shown that this was not due to failure to absorb the drug from the alimentary tract. Clearly, further reports of the trials of carbonic anhydrase inhibitors will be of interest and importance. —Ed., *Lancet*, **2**: 242, 1953.

Sodium Salicylate in Rheumatic Fever

Henderson (*Am. J. M. Sc.*, **225**: 469, 1953) writes that sodium salicylate in massive doses lowers the CO_2 combining power and sodium bicarbonate depresses the plasma salicylate level and tends to return the diminished CO_2 combining power to normal.

Magnesium trisilicate and aluminum hydroxide gel tablets are as effective as sodium bicarbonate in relieving gastric distress due to salicylate administration but do not lower the plasma salicylate level or raise the CO_2 combining power.

Massive doses of salicylate seldom result in any harmful effect, but cause considerable discomfort.

With the availability of ACTH and cortisone, it does not seem justifiable to give more salicylate than the amount necessary to relieve rheumatic discomfort, until there is, more proof that salicylates actually alter the rheumatic process.

Mexamethonium on Renal Haemodynamics

Mills and Moyer (*Am. J. M. Sc.*, **226**: 1, 1953) write that the effect of hexamethonium on renal hemodynamics was studied in 12 normotensive and 19 hypertensive patients. Following injection of 5 to 75 mg. of hexamethonium chloride or bromide intravenously there was an average reduction in blood pressure to 80 to 85 per cent of the control values. In about one-half of the subjects, including both normotensive and hypertensive patients, there was either no change or an increase in renal vascular resistance, so that glomerular filtration rate and renal blood flow were reduced at the point of maximal reduction in blood pressure. However, at the end of one hour this depression was less marked despite a maintained reduction in blood pressure. In the other group there was a significant decrease in renal vascular resistance at the time of maximal blood pressure depression so that glomerular filtration rate and renal blood flow were maintained near the control levels in spite of the blood pressure reduction. After one hour, the observed changes in both groups were similar to those found after surgical sympathectomy. Renal vein catheterization was performed in 2 patients. Oxygen consumption was found to be initially depressed in both, but returned toward the control values with the return of renal blood flow to the original levels in spite of the continued reduction in blood pressure. No change was found in the extraction of p-aminohippuric acid.

From the therapeutic standpoint, the patients with hypertension without renal impairment obtained the best results, in that there was both a significant reduction in blood pressure and renal vascular resistance, so that glomerular filtration rate and renal blood flow were maintained. It seemed significant that these patients were much more sensitive to hexamethonium than any other group. An exaggerated response of the same type was seen in one patient with labile neurogenic hypertension, in that glomerular filtration rate and renal blood flow were markedly increased after a small amount of hexamethonium.

The data obtained would indicate that the acute effects of hexamethonium on the kidney in any given patient will depend on the degree of initial sympathetic renal vasoconstriction, the degree of organic renal vascular disease, the completeness of ganglionic blockade, and the amount of blood pressure reduction. Other factors, including the possibility of renal vascular shunting and renal autonomy were discussed.

The possibility of further impairment of renal function in patients who already have severe organic disease in the kidneys makes it imperative that frequent estimations of renal function be obtained during hexamethonium therapy. Serial determinations of the blood urea nitrogen would seem satisfactory for this purpose. It would also seem inadvisable to attempt to reduce blood pressure to normotensive levels in these patients. Although the presently reported acute studies are suggestive, definitive conclusions cannot be drawn as to results with prolonged therapy of this type.

ACTH in Acute Thyroiditis

Teitelman and Rosenberg (*Ann. Int. Med.*, **38**: 1062, 1953) report on a patient with acute thyroiditis who responded abruptly and favourably to the administration of cortisone. Other therapeutic agents failed to influence the course of this disease.

In the patient under review the aetiologic agent was discovered. The negative blood cultures, absence of leukocytosis, failure to respond to penicillin and history of antecedent infection of the upper respiratory tract all suggested a possible virus aetiology. Since antibiotics and roentgen therapy did not shorten the course of the disease, the authors felt justified in employing cortisone as a nonspecific agent.

The prompt recrudescense of symptoms on cessation of cortisone suggested that the fundamental disease process was only suppressed rather than cured after the first course of cortisone. However, the clinical arrest of this disease persisted when cortisone was discontinued after the second administration, and this suggested that the course of the illness had been definitely interrupted.

Misuse of Antibiotic Troches

Physicians are urged through advertisements to prescribe antibiotic troches casually for the treatment of infections of the throat, although in 1949 the Council on Pharmacy and Chemistry omitted from New and Non-official Remedies troches containing penicillin because of numerous instances of relatively severe sensitivity reactions. Effective concentration of the medicament cannot be maintained for long on the surface of the tonsils or of the pharynx because of the continual washing effect of saliva. Actually, it is impossible to render

the throat sterile, or even aseptic, except possibly for a short time. While it has been observed that in superficial infections of the throat the local administration of penicillin, aureomycin, oxytetracycline (Terramycin), bacitracin, and other antibiotic and chemotherapeutic agents may be effective, their value as topical agents diminishes when the pathogenic micro-organisms have penetrated deeply into the tissues. Once this deeper infection has occurred, locally applied medicaments in the form of troches, lozenges, pastilles, and medicated chewing gum are of dubious therapeutic value. In general, it is hazardous to rely on local medication alone in the treatment of severe infections of the throat.

Recent studies by Kutscher and his associates (*J. Allergy*, **24**: 164, 1953) emphasize some of the reactions that follow the use of aureomycin, oxytetracycline, and procaine penicillin G troches in a group of 343 patients. A control group of 175 patients received placebo troches that were identical in content and appearance with the medicated troches except for the inert filler that replaced the active ingredients. Untoward reactions occurred in 51 of 100 patients receiving aureomycin troches, in 38 of 100 patients receiving procaine penicillin G troches, and in 76 (53·2 per cent) of 143 patients receiving oxytetracycline troches. These reactions to the troches were sufficiently severe to warrant discontinuance of therapy in 14 per cent of the aureomycin-treated patients, in 11 per cent of the penicillin-treated patients, and in 14·7 per cent of the patients treated with oxytetracycline. Although the untoward reactions primarily involved the gastrointestinal tract, severe glossitis, stomatitis, and pharyngitis occurred in 8 per cent of the patients being treated with aureomycin troches, in 6 per cent of the patients receiving penicillin troches, and in 9 per cent of the patients receiving oxytetracycline troches. Some of the oropharyngeal reactions to the three types of antibiotic troches persisted for from 1 to 21 days. No oral or pharyngeal reactions were observed in the group of 175 patients who received the placebo troches.—ED., *J.A.M.A.*, **152**: 533, 1953).

A Bedside Method for Determining the Serum Chlorides

GZIOU AND SILVERMAN (*Am. J. M. Sc.*, **225**: 521, 1953) write that one of the striking features of the mercurial diuretics is the profuse excretion of urinary chlorides and a lowering of plasma chlorides. With prolonged mercurial diuresis hypochloraemia characteristically develops and it is a well known clinical fact that when the plasma chlorides fall to a low level 85 mEq. or less the mercurial diuretics are ineffective, if not dangerous.

As a guide to mercurial diuresis a simple, inexpensive bedside method for examining serum chlorides in presented.

A kit containing a test tube, a dropper, a 10 per cent solution of potassium chromate, and a 0·73 per cent solution of silver nitrate constitute all the necessary equipment. For convenience the solutions may be housed in standard medicine bottles with one piece molded rubber caps. The same size dropper should be used throughout. Five to 10 cc of blood obtained from any convenient venipuncture site is allowed to clot in a test tube. To exactly 10 drops of serum obtained from this specimen a drop of the solution containing potassium chromate is added. A yellow-orange colour is produced. The silver nitrate solution is now added, drop by drop, the number counted, until a reddish brown colour is produced after the mixture is gently shaken. This end point is easily discernible. Each drop of silver nitrate solution required to produce this end point represents 15 mg. of chloride per 100 c.c. of serum. The average normal patient will require between 23 drops (equivalent to 345 mg. of chloride expressed as 575 mg. of sodium chloride per 100 cc.) and 25 drops (equivalent to 375 mg. of chloride or expressed as 625 mg. of sodium chloride per 100 cc.). To check the results the procedure is repeated using 20 drops of serum The value obtained should be exactly double.

Water-Loading Tests for Diagnosis of Addison's Disease

SOFFER AND GABRILOVE (*Metabolism*, **1**: 479, 1952, Ref. *J.A.M.A.*, **151**: 869, 1953) write that in the simplified water-loading test for the recognition of Addison's disease that is described here, 1,500 cc. of tap water is administered orally over a 15 to 20 minute period and urine is collected for five hours. This test was employed in nine patients with Addison's disease and in two with hypopituitarism. None of the 11 patients excreted more than a total of 800 c.c. during the five-hour period, as against the excretion of 1,200 to 1,900 cc. observed in normal subjects. Thus all subjects with primary or secondary adrenocortical insufficieny had inadequate diuresis. The value of this test procedure is its simplicity. In some of the patients with adrenocortical insufficiency the water-loading test was repeated to investigate the effect of cortisone or corticotropin on the urinary volume.

Some Neurological Aspects of the Treatment of Pain

KING (*Indust. Med. & Surg.*, **21**: 403, 1952) write that there are many chronic painful diseases which our present-day therapy is unable to cure. Relief of symptomatic pain, however, may be accomplished by severing the pain fibres supplying the diseased area. Some of the disorders which are favourable to such operations have been enumerated.

The painful disorders which are most satisfactorily treated by surgery are: tic douloureux and glossopharyngeal neuralgia; pain arising from chronic localized disease or injury which involves bones, joints, peripheral nerves, etc.; diseases involving chronic vascular insufficiency (extremities or viscera); cancer (carcinoma of the prostate and cervix are particularly amenable to relief of symptoms by chordotomy), and various visceral and vascular disorders such as angina, chronic pancreatitis, Raynaud's disease, and others in which sections of the sympathetic nerves are favourable both for increasing blood supply and producing anaesthesia.

There are many disorders which are predominantly psychogenic in nature, but in which "pain" is localized in various parts of the body. These are not amenable to surgical procedures carried out on peripheral nerves or the spinal cord.

Prefrontal lobotomy is a drastic procedure which attacks pain at the level of attention. It is excellent where suffering is an important symptom or the pathological process is widespread. It is also suitable for the treatment of psychogenic "pain," but owing to the undesirable side effects, it should be used rarely and with great discrimination.

Life Stress and Industrial Absenteeism

HINKLE AND PLUMMER (*Industrial Med. & Surg.*, **21**: 363, 1952) write:

A study was made of the absences of 1,297 telephone operators throughout their working careers. It was found that in any one year the distribution of absences in the group

was such that the greater proportion was caused by a small proportion of the employees. This was true both in terms of total days absent and in terms of number of times absent.

It was found that the same employees fell into the high absence and low absence group throughout their entire period of employment. For the group, the relation between absence in the first year of service and total absence throughout subsequent years of service showed a high positive correlation.

Three hundred and thirty-six of the employees in this group had had 20 or more years of service. From these 336, 20 of those with the greatest total amount of absence and 20 of those with the smallest total amount of absence were selected for intensive study.

Critical review of the medical records of these two groups indicated that the 20 women with high absence had had frequent minor illnesses pertaining to all bodily systems; and that they had had a large number of major illnesses pertaining to all bodily systems. They had had frequent and prolonged minor disturbances of feeling-state, thought and behaviour, and a large number of major disturbances of this nature. They had had frequent minor injuries and a large number of major injuries causing lost time from work. They had had a large number of surgical operations, both major and minor. The women with a low absence rate, on the other hand, had had relatively few and scattered illnesses in all bodily systems, and very few major bodily illnesses. They had had few and minor disturbances of feeling-state, thought and behaviour, and no major disturbances of this nature. They had had relatively few minor injuries leading to little lost time, and few major injuries. They had had few surgical operations.

The 20 women with a high absence rate were as a group discontented, unhappy, difficult to get along with, and difficult to supervise. The 20 women with a low absence rate were as a group contented, happy, easy to get along with, and easy to supervise. For the entire 1297 employees it was found that general attitude and ability to get along with others in 1950 had a positive correlation with attendance in the first year of service, however long ago that might have been.

It was found that the 20 women with a high absence rate had been exposed throughout their period of employment to life situations and experiences which were to them stressful; whereas the 20 women with a low absence rate throughout their period of employment had been exposed to relatively few experiences which they had interpreted as stressful.

In this group of telephone operators, absenteeism, bodily illness, psychological disturbances, poor attitudes and administrative problems were concentrated in those members of the working population who were having difficulty in adapting to the situations and experiences to which they were chronically exposed throughout their period of employment—*Authors' summary.*

Eye Complications of Malaria

Falcone (*Arch. Ital. Sci. Med. Trop. e Parassit.*, **32**: 287, 1952, Ref. *Trop. Dis. Bull.*, **50**: 185, 1953) quotes the 3 conditions which Elliot has postulated for accepting (eye) disease manifestations to be due to malaria, namely, (i) periodic recurrence, (ii) the therapeutic test of specific antimalaria drugs, and (iii) the demonstration of Plasmodium in the patient's blood. The author then describes 3 cases of serious uveitis which he found to satisfy conditions (ii) and (iii) above but not condition (i). He thinks that in his 3 cases the eye condition was an allergic manifestation of the tract, after the latter had been sensitized by the products of destruction of the malarial parasite.

Nervous and Psychic Manifestations due to Filariasis

Janssens (*Ann. Soc. Belge. de Med. Trop.*, **32**: 229, 1952, Ref. *Trop. Dis. Bull.*, **50**: 52, 1953) writes that since Lorentz (1890) first declared that filariasis was responsible for sudden death attributable to central nervous system involvement a number of workers have from time to time reported neurological complications of the same origin in man and in primates. The literature on this subject is reviewed; it appears from this that in the case of man the manifestations are those of hemiplegia, meningitis, encephalitis, or psychic involvement. Kivits alone has reported cases of encephalitis with a syndrome of encephalitis of a lethargic type which ends fatally coincidentally with invasion of the cerebrospinal fluid by microfilariae. At necropsy the pia mater was oedematous, and the lateral ventricles were dilated; on histological study a form of granuloma formation, which often was located perivascularly, was seen in the nervous tissues. Kivits suspects that the encephalitis possibly favours the escape of the microfilariae into the cerebrospinal fluid, rather than that it is a consequence of their escape; but his observations are of the greatest interest and they give a lead to further research into the matter, which can profitably be followed in the areas of high endemicity of filariasis.

Resochin in Hepatic Amoebiasis

Subramaniam (*Indian M. Gaz.*, **87**: 295, 1952) writes that amoebic hepatitis and amoebic abscess of the liver are of common occurrence in Madras. Thirty-two patients were admitted, and of these, 18 were suffering from hepatitis and 14 from liver abscess. Apart from these there were 19 in whom the presenting condition was pulmonary with only minimal involvement of the liver. The beneficial effects of the drug were felt in 24 hours and no toxic manifestations were evident. An opportunity presented itself to study the treatment of liver abscess on the older lines and to compare the results with the new. On the whole the response in cases of lung involvement was more dramatic than in the liver condition. While with the older methods months sometimes elapsed before completion of cure, with resochin this took place in a week.

The dosage recommended and followed was for the first four days one tablet of 0·25 gm. every six hours, from the 5th to 12th day one tablet twice daily and from the 13th to the 21st day once daily. It is important that the drug should be given after food, never on an empty stomach.

Resochin was available for only 12 of the patients in this series. Full clinical details are given in a table. In all, "the result has been very satisfactory".

Particular mention is made of relief from pain, within 24 hours, and the restoration almost immediately of the diaphragmatic movement, which with emetine does not take place till long after the emetine treatment has been completed.

This drug therefore represents a definite advance in the treatment of hepatic and pulmonary amoebiasis.

Lambliasis as Cause of Abdominal Pains and Liver Disease

Daecke (*Monatsschrift fur Kinderheilkunde*, **100**: 479, 1952, Ref. *J.A.M.A.*, **151**: 1455, 1953) writes that recurrent

abdominal pains accompanied by impairment of the general condition often present a diagnostic problem to the pediatrician. Helminthiasis, relapsing pyuria, tuberculosis of the mesenteric lymph nodes, gastritis, duodenal and gastric ulcer, chronic appendicitis, congenital anomalies of the abdominal organs, lithiasis, hernias, and cardiac disorders are among the disorders that must be ruled out. Latent liver disease, although usually recognized in adults, is often overlooked in children. The author stresses that latent infection with Giardia (Lamblia) intestinalis may sometimes be the cause of liver disease in children. With the aid of duodenal aspiration, *G. intestinalis* is readily detectable in the warm duodenal contents, the pear-shaped protozoan with two nuclei and eight flagella being highly motile. Warm diarrhoeal stools may yield the protozoan flagellates; and air-dried, bile sediment stained with Giemsa stain may also permit identification of the Giardia organisms. The author reviews observations on seven children with latent liver disease in whom the aetiology of abdominal pains was at first obscure. They could be traced to infection with *G. intestinalis*. The abdominal pains had in some cases existed for more than a year. Daecke differentiates an intestinal (enterocolitic), and a hepatic or hepatocholepathic form of lambliasis, and a form with generalized symptoms. The abdominal pains are caused by irritation and inflammation in the gastrointestinal tract, particularly in the duodenum and the bile passages. The improvement that followed treatment with quinacrine (atabrine) hydrochloride is proof of the pathogenetic role of the Giardia organisms. Treatment with quinacrine hydrochloride is usually continued for five days, the daily doses being the same as when the drug is used in the treatment of malaria. After an interval of 14 days, the drug may be given for 3 more days. If the first five day treatment should fail, a second or third course may be given.

Clinical Picture and Treatment of Whipworm Infection

Jung and Jelliffe (*West African M. J.*, **1**: 11, 1952, Ref. *Trop. Dis. Bull.*, **50**: 55, 1953) write that whipworm (Trichuris trichiura) infection is one of the commonest cosmopolitan worm infections. Its presence is frequently ignored, yet it is capable of causing severe symptoms. Heavy infections cause diarrhoea with blood-streaked stools, abdominal pain, tenesmus, loss of weight, and sometimes a hypochromic anaemia. Chronic infections may cause rectal prolapse. Light infections cause allergic and milder degrees of the above symptoms.

The critical worm-load appears to be about 1,000 worms, indicated by 100 eggs per 2 mgm. smear; above this symptoms will usually be definite. The author suggests that in weak ill-nourished African children the symptomatic threshold may be lower.

For the treatment of heavy infections hexylresorcinol enemata are recommended, 500 to 700 ml. of 0·2 per cent in water or glycerin solution. The patient is prepared by a cleansing enema, after which his perineum, buttock, and thighs are smeared with petroleum jelly to prevent burning of the skin. The enema is given slowly and should be retained for half to one hour. One treatment is usually sufficient. This treatment is effective but expensive. A cheaper and simpler but less effective treatment is oral tetrachlorethylene and oil of chenopodium; 2·7 ml. and 0·3 ml., respectively, for an adult (4 ml. of tetrachlorethylene can be given with safety), followed within two hours by a saline purge.

Chloromycetin in Pneumonic Plague

Mercier and MacCrumb (*Med. Trop.*, **12**: 693, 1952, Ref. *Trop. Dis. Bull.*, **50**: 406, 1953) describe in detail the first case of pneumonic plague in which chloramphenicol has been shown to be curative. The patient, aged 60 years, was under close observation before the onset because of having been in contact with a fatal case of the disease so that his temperature was being taken every 4 hours. The treatment was started less than 16 hours after the temperature began to rise.

Benefit from the drug was not immediately obvious; for a few hours the clinical and radiological condition deteriorated in the usual way, but after about 12 hours the temperature began to fall and rapid improvement was observed.

The same treatment has later been given to 5 patients attacked by bacteriologically confirmed pneumonic plague; only one patient died and his death was probably attributable to delay in starting the treatment.

The authors in another article in the same journal, pp. 698-706 describe two cases of pneumonic plague in detail; both were closely comparable to the one described in the preceding paper except that the treatment was by terramycin, of which the first doses were given within 2 and 4 hours, respectively, of the onset. The dosage was the same as that of chloramphenicol except that the second and third intravenous doses were of 0·25 gm. each instead of 0·5 gm. The ages of the patients were 43 and 39 years, and the responses to treatment were more rapid, especially that of the younger patient who was definitely restored to health within 48 hours.

The authors state that terramycin ranks with streptomycin and chloramphenicol in the effective treatment of pneumonic plague.

Diaminodiphenylsulphone in Leprosy

Roy (*Leprosy in India*, **24**: 130, 1952) in giving the comparative results of treatment with DDS orally and DDS injected subcutaneously observes: Ninety-eight patients were given DDS orally for an average period of 17·1 months, and 140 patients were injected subcutaneously with a suspension of DDS in oil for an average of 12 months. In the former the average amount of DDS per patient per year was 28·5 gm., and the number with improvement was 75 per cent. In the latter the average amount per patient was 19·38 gm. and the improvement was in 74·2 of the patients. It is concluded that "if the trouble of injecting the suspension is not taken into consideration, there is a great advantage in using the suspension of DDS parenterally. Here both the amount of the drug and the period of treatment are lessened to a great extent".

Novotrone in Leprosy

Dharmendra, Chatterjee and Sen (*Leprosy in India*, **23**: 154, 1951) write that Novotrone is a drug similar to sulphetrone, though said to be made by a different process. It is made by an Indian firm of manufacturing chemists. It can be given either orally or, as it is very soluble, by injections of a watery solution, 50 per cent being found suitable. Twenty-seven patients were treated for less than a year, 15 being given intramuscular injections, and 12 oral administration. "All the patients showed clinical improvement; the reaction was controlled and did not recur, and the lesions showed considerable subsidence. A feature of special interest has been that considerable improvement was

seen in all the 5 cases whose condition had not improved or had actually become worse under treatment with hydnocarpus oil for a number of years. None of the patients became bacteriologically negative, but in about half the cases, there was appreciable bacteriological improvement", an improvement which has not been expected in so short a time judging from experience with other sulphones. "Novotrone shares both the advantages and limitations of the other sulphones in the treatment of leprosy."

ACTH and Cortisone in the Treatment of Complications of Leprosy

Low (*Brit. M. J.*, **2**: 746, 1953) writes that ACTH and cortisone were used in two classes of complications: (1) allergy to chemotherapy and especially to treatment with sulphones, which shows itself by drug fever, dermatitis, and hepatitis which may go on to necrosis of the liver; (2) excessive tissue reaction to the bacilli and their products with one or more of the following manifestations, acute leprous neuritis, acute leprous eye inflammation, lepromatous reaction. The number of cases treated by the author with these hormones up to February 10, 1952, was 38: sulphone dermatitis, &c., 4 cases; acute neuritis 8; acute leprous eye condition 7; lepromatous reaction 16; tuberculoid reaction 1; leprous elephantiasis 1; acute leprous arthritis 1.

It was found that while acute manifestations of leprosy can be readily controlled by hormone therapy, there is a grave danger of aggravating the underlying disease, particularly in those receiving short courses of treatment, and even if aggravating the particular symptoms to alleviate which the hormone has been given. Thus the early results are good, and the late results too often bad. But in two serious complications of leprosy and its treatment the results were striking and "are usually attained with such small doses that hormone treatment is fully justified". These are: (1) sulphone sensitivity with drug fever, dermatitis and hepatitis, giving 100 mg. cortisone every 12 hours for two days, and then 50 mg. every 12 hours for one day; and (2) acute and subacute leprous eye inflammation, in which the local use of cortisone (eye-drops hourly by day and less often at night) appears to be effective and safe.—*Trop. Dis. Bull.*, **50**: 36, 1953.

Pyridoxine in Restoration of Muscle Power in Egyptian Pellagrins

Hammouda and Sidqy (*J. Roy. Egyptian M. A.*, **35**: 413, 1952, Ref. *Trop. Dis. Bull.*, **50**: 57, 1953) give in the following lines the summary of their observations on the effect of pyridoxine in the restoration of muscle power of Egyptian pellagrins:

The muscle power of Egyptian pellagrins is proved to be very much below normal, and improves only on the administration of pyridoxine.

The muscle power of Egyptian pellagrins responds promptly to pyridoxine in both the individual strength of the contractions and in the total work done.

At present the Egyptian pellagrins leave the hospital with a very low muscle power, and are unable to carry out their manual work with a resulting incapacitation of earning their living, and liability to relapse into further nutritional deficiency.

As in the present treatment of pellagra no consideration is made for the restoration of the muscle power, we recommend a course of pyridoxine by mouth.

CURRENT TOPICS

THE PRESENT CONDITION OF THE PHARMACEUTICAL INDUSTRY IN INDIA

S. P. DE,

(*Central Drugs Laboratory, Calcutta*)

All plans for the future development of the country will be incomplete if provisions are not made for the development of the Drugs and Pharmaceutical Industry. A critical analysis of its present conditions, therefore, becomes very important. A large country with a population of over 350 million, where a large number of endemic and epidemic diseases prevail, India naturally needs large quantities of drugs and pharmaceuticals for the suffering people. In the olden days, when the Indigenous System of Medicine flourished, all the medicaments were procured from within the country. The physicians generally had all the arrangements at home for preparing the different medicines they prescribed. The sub-Himalayan regions were a rich source of supply for these medicinal herbs. After the western system of medicine was introduced into the country all the medical requirements came from abroad, particularly from Great Britain. In the early part of the present century, Drs. Prafulla Chandra Ray, Kartic Chandra Bose and a few other pioneers attempted to manufacture some of the B. P. drugs in this country. After the first World War several firms were registered in India, particularly in Bengal for the manufacture of B. P. and other pharmaceuticals in this country. The Second World War gave another stimulus to the industry mainly because imports were restricted and demands by the civil and military departments increased. At the present time there are several hundreds of licensed drug manufacturing firms in India, particularly concentrated in the States of W. Bengal and Bombay. In and around Calcutta alone there are more than 150 manufacturing houses. Does all this mean that we have now a mature drug industry? Does this mean that perhaps in the near future this industry would be able to meet all the local demands? An answer to these questions could be found if we take a stock of the present condition of the industry. The author had the privilege of inspecting a large number of the firms in and around Calcutta. These could be classed under different categories, there were a few large joint stock companies employing several hundreds of workers, but the majority were small establishments usually of individual or small group ownerships employing a few dozen workers and there were many where not even half a dozen people worked. In most of these places various kinds of patent and proprietary medicines were prepared and almost all of them manufactured certain items of the Schedule C and C(1) drugs of the Drug Rules. These later items bring the largest returns, hence any one starting a pharmaceutical industry immediately turns to preparing such items as intravenous glucose solutions, distilled water and normal saline ampoules, liver extracts for parenteral therapy, calcium and alkaloid preparations and in some cases even vitamin preparations and prophylactic vaccines. From what I have found in most of these places, I am sorry to say that in the majority of these establishments the arrangements are not adequate for undertaking manufacture of such important medicines and the preparations offered for sale could not be classed as quality products. Insufficient accommodation, inefficient personnel, inadequate appliances and improper control of products are usually

responsible for this state of affairs. These mushroom firms by issuing low quality and sub-standard drugs in the Indian market have lowered the prestige of the industry and are responsible for the loss of confidence by the medical profession for Indian pharmaceutical preparations. That is why inspite of hundreds of drug manufacturing firms, India still imports drugs worth several crores of rupees annually from abroad. This drain of national wealth could be prevented by re-organising the industry on proper scientific lines and eliminating the undesirable elements. The Government could help in this matter by becoming stiffer in issuing licences for manufacture of drugs, and laying down more rigid rules for running such establishments. During my recent tours abroad, I made enquiries about the Drug and Pharmaceutical Industries in those countries. As most of my time was spent in the United States of America, I will write about the conditions of the industry in that country.

In the United States, I have visited several manufacturing establishments, large units and small ones. From what I have seen there, I can say that whether large or small, every drug manufacturing house in the States follows certain patterns and regulations, so that there is a general uniformity in the general set-up and they follow certain standards regarding personnel, equipment and technique. No one is permitted to manufacture drugs unless he satisfies the conditions laid down under the regulations. To overhaul the industry in India we also need certain general standards and specifications. Licence to manufacture should only be issued after inspection and after complete satisfaction that the laboratory is planned on proper lines. To enable us to lay down such general regulations we have to formulate certain rules which must be satisfied before the firm could be granted permission to manufacture drugs and pharmaceuticals. I would suggest the following general regulations:

(1) Specifications about Buliding, Floor Space and Environments.

It is essential that permit to manufacture drugs should only be given to those who have the proper type of building and adequate floor space. I have found important parenteral preparations being manufactured in parts of residential apartments, stables, garages and even in domestic kitchens. I have seen manufacturing units occupying not more than 200 sq. ft. of space. Some of the laboratories I have visited in Calcutta are situated in the filthiest localities in most insanitary approaches.

In the United States the larger manufacturing houses always prefer sites outside city limits, thereby they get larger space and cleaner surroundings. This tendency of going out of city limits indirectly helps building of small townships. The development of townships of Pearl River, N.J., Kalamazoo, Mich., Kankakee, Ill., and North Chicago, Ill. have been helped immensely by some of the America's pharmaceutical companies and it benefited immensely the local population. To-day dispersal of industry is needed in India, not only to relieve the congestion of the cities, but also to help the growth of smaller towns and absorb the surplus unemployed agricultural population.

(2) Personnel, Equipment and Appliances.

As I have already pointed out, the large number of drug manufacturing firms here are either personal properties or belong to small groups of people, the result is often the lack of adequate capital and financial stability. Most of these firms meet their expenses from the day-to-day sales. The result is, the staff employed is not properly qualified due to low salaries paid and sometimes insufficient in number for the volume of work done. Funds being inadequate most of these laboratories have nothing in the form of apparatus or equipment. I have found properly licensed manufacturing houses having no more equipment than only a ricketty autoclave and a dozen flasks. Even many of the larger firms who have fairly good business have been found operating without having made arrangements for some of the most essential tests that are needed for controlling the quality of their products.

Permit to manufacture drugs should be given only to such establishments as could plan their laboratories in the proper way, could afford a complete set of qualified staff and could equip the laboratories with the proper types of appliances and apparatus.

In the United States, even the smaller units are scientifically planned. The layout of the larger houses are unique. Besides proper and thorough planning of the manufacturing units, most of these firms have a separate research department and millions of dollars are spent annually to promote research on new products. Strictly detached analytical and quality control laboratories always form a part of the establishment, where the products are being checked so that no drug leaves the building without the seal of approval of the Control Section. How many of our manufacturing firms have this set up?

(3) Permission to Manufacture Schedule C and C_1 Drugs.

All pharmaceutical houses should not be allowed to prepare injections. During my inspections I have found drugs containing arsenic, antimony or mercury being prepared without the proper arrangements for toxicity tests, parenteral preparations are being manufactured at places where there is no proper arrangement for preparing distilled water. It is not only improper but dangerous to allow these firms to manufacture parenteral preparations. I have repeatedly requested these firms to switch on to the manufacture of safer preparations. I do not know how many of them have cared to take my advice. In the United States even the manufacture of cosmetics need a proper licence, and cosmetics are tested in the Food and Drugs Administration Laboratories as carefully as any drug or pharmaceutical. Cosmetics that are intended for prolonged use, e.g., lotions, dyes, creams are always tested for freedom from chronic toxicity.

If the licence for manufacture is issued after scrutiny on these points the standard of the Industry in general would probably improve and the quality of the products would definitely be dependable. Although the responsibility for the quality of the products is primarily the manufacturers', the Government has also its own obligations and duties. The State Governments should always remain alert about the quality of the preparations offered for sale in the market, and the State Drugs Act machinery should be rigidly organised.

I had the fortune of visiting the Federal Security Agency's Food, Drugs and Cosmetic Administration offices in Washington D.C. The department is ever vigilant and no sub-standard or unethical preparations get into the United States market. In the United States, the postal department can refuse to mail such products. Besides the Administration Offices, the department has a huge testing laboratory at the Agriculture Department Buildings in Washington, D.C. In these laboratories, drugs, food preparations and cosmetics are

tested. There are nine departments the most important amongst them being:

(1) The Antibiotics Division.

(2) The Bacteriology Division.

(3) The Nutrition (Biochemistry) Division.

(4) The Pharmaceutical Chemistry Division.

(5) The Pharmacology Division.

The laboratories are housed in a large wing of an eight-storied building and occupies several hundred thousands square feet of floor space. Several hundreds of workers are engaged in these departments. Elaborate arrangements have been made for housing the animals required for these tests. The Food and Drugs Act demands that samples of certain drugs, pharmaceuticals, food preparations and cosmetics must be sent by the manufacturers to these laboratories for test before release for sale. The field staff also collect random samples from manufacturers or dealers and send them to these laboratories for check up. Even private parties could send a sample if they are suspicious about its quality. Apart from this Federal organisation, the individual States have also their own set ups. Most of the State Food and Drugs Regulations are patterned after the Federal system. They have their own laboratories and field staff but their business is mostly confined to the limits of the State, inter-State affairs being dealt by the Federal authorities. Due to this dual system to control, the manufacturers are naturally afraid to release anything that might be held up by the authorities. They are therefore careful about their products and subject them to a thorough control test before release to the market. Besides the Federal and the States Food and Drugs Administration system, the American Medical Association Headquarters in Chicago have a very well equipped laboratory under the supervision of the Association's Council of Pharmacy, for testing samples of pharmaceuticals, special food preparations, surgical and medical appliances. List of accepted preparations always appear on the pages of the Journal of the American Medical Association. It may appear that the role they play is superfluous and a mere duplication of the State body's work. On enquiry I learnt that the council has two important roles. It sometimes, gives a quick preliminary report on matters which might be pending before the Federal or the State bodies. The manufacturers also may take the advantage of the Council's seal of acceptance for promoting the sale of their products to the medical profession. The A.M.A. by publishing the list of such products in the columns of its Journal helps the medical profession in the choice of the right kind of drugs, foods and appliances. All this helps the profession as well as the industry, and the latter in turn tries to maintain the standard quality of their products. Could not the Indian Medical Association start a similar Council of Pharmacy and help the profession and bring a healthy tone in the industry? In India, the introduction of the Drugs Act in 1940, helped to a great extent to rectify some of the defects then prevailing in the drug industry and trade. The Central Drugs Laboratory in Calcutta is the prototype of the Federal Foods and Drugs Administration Laboratories in Washington D.C. This laboratory checks the quality of some of the drugs being manufactured in this country as well as those being imported into the country. The different States of India have also their provincial test laboratories. Besides the laboratories, the State Governments have also a field staff of inspectors who inspect manufacturing houses and dealers, can seize random samples and send them to the provincial laboratories for test. They can also report on other matters of violation of the Drugs laws. But limited as the resources of the States are at present, there is much to be desired, and the greatest tragedy lies in the industry's taking advantage of this situation. Honesty cannot be imposed, it must be spontaneous if we are to rise as a nation. Unless the industry realises its responsibilities no amount of State supervision can put the houses in order and cure the rot that has set in. In view of the condition prevailing, certain other measures could also be introduced to control the drug trade. Most of the drug industry at present is concentrated around the cities of Calcutta and Bombay. In both these cities there are also a large number of wholesale and retail dealers in medicinal preparations and almost all the foreign drugs imported into the country come through these two ports. It is therefore desirable, apart from the State Control departments, that the city municipalities should set up a body to control the drug industry, and the wholesale and retail trade in the city. The New York City Board of Health has a Food and Drugs Control department. Besides the laboratory at the main offices at Worth Street, where samples are sent for analysis, there is a strict inspection system for all manufacturing houses, wholesale and retail stores. The inspectors have to visit these places periodically and submit their reports to the main office. The same system applies to the Food department. I had accompanied some of the inspectors during their inspection tours. I was amazed to see how efficiently they did their jobs and how seriously the mannufacturers or the dealers tried to obey the rulings of the Act. An establishment dealing with meat products had to suspend its business for several weeks because the floors of the main processing rooms were not properly prepared and could not be thoroughly cleaned. I have visited several manufacturing firms, wholesale food and drugs dealers, retail drug stores and eating houses. I have come back with the feeling that the drugs and food sold in the States can be safely consumed. The people behind the industry consider their trade a sacred trust. During my visits to the pharmaceutical houses, I have found that whether large or small, each factory is planned more or less on the same pattern. The lay-out, the appliances, the methods of control are more or less the same, the difference between the large and smaller ones is only of magnitude. In almost all the large manufacturing houses there is also a separate research department. The research departments in many cases are housed in large, well planned buildings and have equipment and appliances, which sometimes beat hollow some of the academic institutions I have visited. Here a team of qualified scientific staff is always engaged in improving the products or are conducting researches on newer remedies for alleviating the suffering of humanity. Some of the firms I have visited spend millions of dollars on their research laboratories. They have on their staff, some of the best men and women available in their fields and have given them all facilities for work. It is in one of such laboratories that the late Dr. Subba Rao carried out most of his brilliant researches. In another laboratory I met Dr. Naidu who for the last 25 years has been serving with an American commercial firm without any regrets. There is no prejudice against nationality, colour or creed in these institutions. This is the outlook of the American Drug industry to-day, it is this spirit that has enabled some of the commercial houses give the medical profession some of the most outstanding products, preparations that

have revolutionized medicine. Chloramphenicol, Aureomycin, Terramycin and the other antibiotics that followed the discovery of Penicillin are all products of researches undertaken by the American Pharmaceutical Industry. In England and some European countries too commercial houses have made valuable contributions to medicine. The discovery of Vitamin B_{12} is the result of researches conducted in a British and an American commercial laboratory. In contrast to what is being done by the drug industry abroad where are we? Has the Indian drug industry any such record? The Government of India's Pharmaceutical Enquiry Committee is collecting facts and figures which are considered to be responsible in creating difficulties in the way of development of the pharmaceutical industry in India. The representatives of the industry have given evidence before the Committee and perhaps would crave protections and privileges. Most of our manufacturers have been ever since the inception of the industry mere "bottlers". They have been buying bulks of foreign ingredients and have been playing the roles of mass dispensers. Cheap imitation of foreign patent and proprietary remedies is all that our industrialists can be proud of. The industrialists have to change their outlook, if they seriously want to develop the industry. They have to plan now scientifically if they want to survive and grow. No amount of special protection can bring the healthy tone in the industry unless the mentality of the people behind it changes.

The medical profession has indeed an obligation to suffering humanity, their patronage cannot be won by merely appealing to their sentiments, or asking them to support a 'national' industry. In the choice of drugs we must have only the very best. Unless the Indian pharmaceutical concerns give to the profession, medicines whose quality would be unimpeachable, whose potency would be guaranteed, mere appeals would prove a failure. Banning entry of foreign drugs at this stage would prove disastrous. Our industry should be asked to prepare all the items that are at present being imported, compete with the foreign firms on merits of quality and prove to the medical profession that what they give is in no way inferior to those imported. If they could convince this there would be no difficulty in pushing the sales of these products. To replace the foreign products they must also carry on continuous researches and put before the profession newer remedies, tested scientifically and capable of throwing newer lights on therapy.

To the foreign firms who are starting branches in India I would suggest that instead of being mere "packers", they should initiate full scale manufacture in India and encourage young Indian scientists to take up pharmaceutical and drug research. All those at present engaged in the drug industry cannot take up these responsibilities. Only those that could, should survive, the rest, the weeds and mushrooms, must go.

I am not writing this article with the idea to criticize our own industry, and to support the foreign. I write it because I feel that unless we take a warning to-day, we would fall behind the competition in near future. This is not an admonition but a friendly advice to the manufacturers. They must realize their responsbilities, rise up to the occasion, if they really want to develop the industry on solid foundations and thus play a vital part in the future planning of the country.

PHARMACEUTICAL INDUSTRY IN INDIA*

S. K. RAY CHAUDHURI,

In-charge, Pharmaceutical Department,
Karamchand Thapar & Brothers Ltd., Calcutta

The birth and development of the pharmaceutical industry in India read like a romance. About one hundred years ago when India was passing through a critical evolution to have a compromise between the stagnant eastern culture and the overpowering and ever-expanding civilisation of the West, the popularisation of Allopathic Medicine that came in the wake of English culture created the first inception for pharmaceutical industry in India. It was in that age of wavering social and mental conflicts that Calcutta had the fortune to see the birth of the first Medical College for teaching the Western System of Medicine in the East. Inscrutable are the ways of Providence. It was a wonderful coincidence that in the same year when this Medical College was established in Calcutta under a salute of guns from Fort William to honour the first student, who, in spite of social restrictions touched a dead, human body for anatomical dissection, the sparkling genius in an enterprising boy of Howrah, late Butto Kristo Paul was born to found, later on, the first house for importing and selling foreign pharmaceutical products in India. His example was imbibed by a few more enterprisers and thus Calcutta became a stronghold for foreign pharmaceutical trade. When this foreign exploitation was rampant without the least suspicion of our growing political leadership, an England-returned Professor of Chemistry at the Presidency College of Calcutta was pining in agony in order to find out ways and means to call a halt to this foreign exploitation. Dedicated to the service of Humanity, the tiny and ricketty frame of this Professor, late Acharya Prafulla Chandra Roy, conceived the first idea in his Research Laboratory. He staked his all, —even his paternal golden watch and chain, and Bengal Chemical and Pharmaceutical Works Ltd., as the pioneering concern in the domain of drug manufacture was ushered into existence.

Within a few years since then came the World War No. I and along with it the terrible paucity of allopathic medicines to which both the doctors and patients became accustomed. It was felt necessary by the then scientific brains in Bengal that a few more pharmaceutical laboratories should be started to cope with the demand. But capital was extremely shy—even Bengal Chemical who had by such time created a little popular confidence was stifled for want of adequate finance required for expansion and progress in conformity with the advanced scientific knowledge. But as Emerson says,—"When Nature has work to be done she creates a genius", Bengal had the unique fortune in those days to claim a few outstanding leaders, e.g., late Sir Rashbehari Ghosh, Chittaranjan Das, Sir Nilratan Sircar, Bhut Nath Paul, etc., who not only opened their own purse to develop this industry in various ways but instilled a spirit of confidence in the minds of the financiers to invest in this great industry.

The manufacture was confined in that period to British Pharmacopoeial Galenicals, liquid extracts from indigenous herbs having medicinal value described in Ayurveda, surgical cotton and disinfectants. Along with this, efforts were being made to find out suitable substitutes for reputed foreign patents. Within a very short period, a few more pharmaceutical concerns, e.g., Dr. Bose's Laboratory, Smith Stanis-

*Abridged from an address to the Rotary Club, Patna.

treet, Butto Kriso Paul and Co. (Research Laboratory), Lister's Antiseptics and Dressings Co., etc., came into existence in Calcutta and signs of progress became manifest.

The march of development in medical science particularly in the domain of immunisation against bacterial infections gradually came uppermost in the medical minds of India. Sera, vaccines, bacteriophages, etc., as manufactured in foreign laboratories were monopolising the Indian field. It was at that psychological moment, Dr. B. C. Roy, the most towering physician of Asia, the present Chief Minister of West Bengal conceived the idea of manufacturing these biological products from local strains of bacteria. He was lucky to have late Sir Nilratan Sircar as his guide and Dr. H. Ghosh and late Capt. N. N. Dutta as his followers. So within a very short time when World War No. 1 was still continuing, Bengal Immunity Co., Ltd., after having passed through several initial difficulties developed into the pioneering institution for the manufacture of therapeutic sera, vaccines, bacteriophages, gland products and other special preparations. The success attained by all these manufacturing houses emboldened and encouraged a few more enthusiasts in Calcutta as a result of which Calcutta could now claim a host of pharmaceutical manufacturers among whom Union Drug Co., Ltd., Standard Pharmaceutical Works Ltd., East India Pharmaceutical Works Ltd., Calcutta Chemical Co., Ltd., enjoy a great status in India and abroad.

Fifteen years after the struggling birth and development of pharmaceutical industry in Calcutta, Bombay with her fine business acumen and high scientific conception became attracted to exploit this industry. Late Raj Mitra, B. D. Amin and Dr. Gazzar were the pioneers although in recent years Dr. K. A. Hamied and Dr. B. K. Nandi have contributed tremendously by exploring many unknown domains. Bombay now claims a few outstanding firms, e.g., Alembic Chemical, Cipla and Teddington Chemical Factory (T.C.F.) who can stand well in comparison to any foreign laboratory. Since 1935, Uttar Pradesh, the central bed of India also embraced this industry in right earnest as a result of which a few firms, e.g., Indian Medical Supply Laboratory Ltd., (commonly known as I.M.S. Laboratory Ltd.), Hind Chemicals and Mathur Manzoor, have been working hard with a go-ahead policy. A few concerns have been started in Southern India, a few in Northern and Western India. As a matter of fact, India now claims about two hundred pharmaceutical manufacturers, big and small, a few out of whom have already attained international repute.

Towards the fag end of his noblest life, Acharya Prafulla Chandra Roy, while watching with tears of heavenly joy the marvellous achievements of pharmaceutical industry felt the urgent necessity of inaugurating Indian Chemical Manufacturers' Association with a view to co-ordinate the activities of all the enterprises and safeguard their interests particularly against the competition from foreign manufacturers who, under the patronage of the then alien rule made India a dumping ground for foreign medicines. But for some parochial activities of a few members here and there, the association has been rendering very useful service by percolating necessary scientific informations and tackling the various problems particularly in relation to the Government.

It goes without saying that in spite of a spectacular progress the industry is still now suffering from self-competition as most of the manufacturers are confining their activities to the same lines. This has occurred for want of a planning either from the Government or from the industrial sector. During about two centuries of British rule this industry in which interests of the British manufacturers have always clashed, could not receive any encouragement; rather, during the last two World Wars when foreign sources of supply were dismantled the Indian manufacturers were exploited to the core but again after the cessation of wars, artificial difficulties particularly in the import of essential, foreign raw materials and machinery were created to stem the progress of Indian industry. Thanks to the five-year plan of our National Government, the condition of pharmaceutical industry is being studied by an Enquiry Commission, who unfortunately do not possess any person having a long and first-hand experience of the industry. This only indicates however nationalistic outlook our Government might have, they have not yet been free from that bureaucratic temper which has come upon them as a noble heritage from British rulers.

Despite the irregular and erratic development of pharmaceutical industry we could declare with all emphasis at our command that India has achieved quite a large measure of self-sufficiency in many groups of our medicinal requirements. According to 1948 census of manufacture and imports, against a total import of finished medicinal products for rupees eight to ten crores, the Indian production could come up to a little over rupees six crores and seven lacs. In 1939 the Indian production could meet only thirteen per cent of civil and military medicinal requirements whereas in 1943 when the second World War was going on, this percentage came up to about seventy. This only shows the potential resources of the industry which under proper encouragement can very easily meet the requirements of the country.

The production of pharmaceutical industry in India at the present moment consists of B. P. galenicals, patents, injections, biological and glandular products like vaccines, sera, antitoxins, bacteriophages, a few hormones, shark liver oil, liver extract, a few alkaloids, fermentation products, inorganic drugs, and chemotherapeutic drugs. But unfortunately for us, due to lack of basic chemical industry and coal-tar intermediate industry in India we have to spend considerably on the import of chemicals from foreign countries. So, in case of a political isolation from those countries which export our requirements there will be a horrible situation. Vigorous efforts are now being made to develop basic chemical industry in India. But the problem boils round the know-how. It must be admitted that the scientific education as imparted through our various universities is not yet very much helpful in this respect. Experience in laboratory coupled with ardent researches can only give the clue to the problems. So, till then foreign help particularly for training our local talents and creation of basic chemical industries in collaboration with Indian capital is indispensable. In this respect we should have an example from Great Britain who had to depend upon continental and American raw materials in 1914 when the World War No. 1 was in its worst fury. So, in 1921, when the War was over, they promulgated the safeguarding of Industries Act under which thirty-three and one-third per cent duty was levied on imported materials and the local manufacturers were spurred to basic industries. Due to such a wise step during the World War No. 2, they became completely self-sufficient.

Medicinal herbs and plants form a great requirement in pharmaceutical industry. India has yet to depend upon so many imported crude drugs which can easily be grown in India. India has got various suitable zones, climates, soils, etc., where the different types of medicinal herbs and plants

can be grown. It is not possible for any particular industrialist or even a group of industrialists to take up this work. Our Government can easily develop a "National Herbarium" with the help of the various Botanical Gardens and grow all sorts of medicinal herbs and plants. Such a work will not only bring a tremendous revenue to the Government but also earn a great prestige throughout the scientific world.

Chemical Engineering though taught in some institutions in India has to be stressed upon for further progress so that the special appliances and equipment as required in pharmaceutical industry can be locally made. A few universities in India, e.g., Banaras, Ahmedabad, Agra, Rajasthan, Punjab have already been imparting specialised pharmaceutical education. This is undoubtedly a very great work. But mere university education is not enough for the proper usefulness of a chemist in industry. It is the development of a tradition in pharmaceutical pursuit that makes a true chemist who can then contribute immensely to the advancement of the industry.

To rationalise and develop pharmaceutical industry in India on sound lines, a drugs legislation has come into force in Part A States. Col. R. N. Chopra and his erstwhile disciple, Dr. B. Mukherjee, Director of Central Drugs Research Institute, Lucknow, are the main architects of this benevolent Act. But unfortunately its proper enforcement is being delayed in many States as a result of which the manufacture and trade in spurious drugs remain still now a terrible menace in India. The Central Drugs Laboratory which has the function to analyse the Indian products for quality is under the direction of a very able and outstanding scientist, Dr. M. D. Chakrabarty. Counter samples of products as analysed in this laboratory have further been examined in American laboratories. It is now evident from the observations of the Pharmaceutical Journals of America, 1949, that eighty-two per cent of the Indian products are found up to standard. Recent reports must be still more satisfactory.

Although the bulk of the medical profession do not find much time to take interest in the activities of Indian pharmaceutical industry, yet outstanding medical authorities in India such as, late Sir Nilratan Sircar, Dr. Kartick Chandra Bose, late Sir U. N. Brahmachari, Dr. B. C. Roy, Dr. H. Ghosh, late Capt. N. N. Dutta and late Dr. Subba Row, the author of Aureomycin could be remembered by us with sincere gratification for their active and valuable contribution to the industry. Just at the present moment various efforts are being made to produce antibiotics in India. Dr. B. C. Roy has been trying to start an antibiotic laboratory in Calcutta in collaboration with Chas. Pfizer and Co. of U.S.A., Standard Pharmaceutical Works Ltd., Calcutta, have been working with a pilot machine for the manufacture of Penicillin, Sarabhai Chemicals of Baroda have been trying hard to produce Terramycin. Near Bulsar, a very big laboratory has recently been started in memory of late Dr. Subba Row for large-scale manufacture of Aureomycin. Under the auspices of the World Health Organisation a Penicillin factory is going to be started very soon near Bombay.

As the pharmaceutical industry depends pre-eminently on high chemical research, we cannot expect quick results. If we trace the history of Penicillin discovery we find that the initial conception was started by Pasteur in 1876, worked assiduously by Tyndall in 1881 and discovered ultimately by Dr. Alexander Fleming in 1928. The same chain of strenuous and prolonged research has been followed in case of other antibiotics, e.g., Streptomycin, Aureomycin, Chloromycetin, Terramycin, Bacitracin, Viomycin, Tyrothricin and Polymycin, some of which are still awaiting clinical establishment. We should feel proud that our Indian talents under suitable opportunities can achieve the same laurels as attained in Western countries. The career of late Dr. Subba Row author of Aureomycin is a testimony to this assertion.

Just at the present moment, in spite of drugs legislation, the menace of spurious drugs is creating a great havoc to the innocent people. The manufacture and sale of spurious drugs come from that pathological state of mind which wants to earn money at any cost. The best course to put an end to this social scourge is to enforce the drugs legislation very rigidly in all the States and to legislate this offence as cognizable so that the most stringent punishment even amounting to death could be dealt on the offender. Among the Part A States it is gratifying to note that, thanks to the zeal and ability of Dr. B. D. Wadhwa, Asst. Drugs Controller, the Drugs Act has been very capably enforced in Uttar Pradesh. This should serve as an inspiration to other States as well.

Whatever might be the status assigned to India's pharmaceutical industry in the context of the vast development in the west, it must be admitted that pharmaceutical industry in India has definitely made rapid strides as a result of which its products have not only earned a reputation in India but also in many countries in the East e.g. Burma, Thailand, Strait Settlements, Ceylon etc. It is necessary that we should realise the immense possibility of exploring the vast realm of Ayurvedic and Unani drugs, which, if possible should be perfected through modern scientific concepts. A time may come when this ancient heritage may help us to extend our remedies beyond the shores of India and to earn the same recognition as attained by the manufacturers of antibiotics in U.S.A.

NOTES AND NEWS

INTERNATIONAL SOCIETY OF HAEMATOLOGY

Applications are invited for Fellowship and Associate Membership of the Society for consideration by the Board of Counsellors in their next meeting during the fifth biennial congress of the Society to be held in Sorbonne, France from 6th to 13th September, 1954.

(A) Eligible for *Fellow* shall be any person who manifested a continuous interest in Haematology for a period of at least 5 years as evidenced by original contributions, attendance at haematological meetings, teaching and diffusion by writing on haematological subjects. They shall be medically qualified or hold an earned doctors degree (Ph.D. or its equivalent). (B). *Associate Member* shall be any person who does not hold any Medical or Doctor's degree but possesses all other qualifications for Fellowship.

HOME-TREATMENT OF T. B. PATIENTS

The extreme importance of developing home-treatment services in India for persons with tuberculosis and the need to train large numbers of public-health nurses and home-visitors for this purpose are stressed in the final report of a WHO team which has assisted the Government of Bihar State in establishing a model Tuberculosis Control Demonstration and Training Centre at Patna.

Treatment facilities for tuberculosis in Bihar State are limited, the WHO report states, as is the case in most of the rest of India. Hospitalization of T. B. patients is therefore impossible except for a very small minority of tuberculosis-sufferers, and for this reason other ways of tackling the problem must be sought. "The only feasible solution," the report states, "seems to be domiciliary treatment, which could gradually increase and deal with many more patients in their homes."

Commenting on the critical importance to a country like India of developing an extensive system of home-treatment for T. B. sufferers, the WHO report points out that besides being less costly than adequate numbers of sanatorium beds would be, this approach has the additional advantage of being able to reach individual patients and their families in surroundings where they can be effectively taught basic principles of hygiene and how to prevent the disease from spreading further.

The report recognizes that it will be many years before sufficient numbers of adequately-trained workers—health visitors, in particular can become available for such a programme. "However, it is beyond doubt," the report says, "that ultimately this approach will lead to a degree of success fully justifying the expenses incurred by the community in developing it."

WHO EXPERTS ON HEALTH EDUCATION OF THE PUBLIC

Health education of the public seeks to promote higher standards of health by increasing knowledge and influencing behaviour and is now considered an essential part of modern public health services.

For this reason the World Health Organization has appointed an Expert Committee to formulate a programme on Health Education of the Public.

Experience shows that education work on health matters is a far more complex question than expected. A wide range of factors has to be taken into account, not only medical, but also social, cultural, economic and religious factors, which differ widely from one country to another. Educational tools, such as posters, films, demonstrations, etc., must be adapted to the interest, problems, psychological and cultural characteristics of the people concerned.

Thus, although it is not possible to establish uniform educational methods and measures applicable to all countries, the WHO experts will attempt to define some common principles which could be considered as universally applicable.

They will also present recommendations as to training requirements for health education workers, one of the major handicaps at the present time being the lack, or even the complete absence of training opportunities for many categories of health workers and educational leaders such as doctors, nurses, teachers, sanitation personnel and voluntary workers whose educational role is extremely important.

Finally, the WHO experts are to take up the question of scientific research and the assessment of health education. Research is needed into new educational methods and materials, their relative cost and their applicability to societies at different stages of social educational and ecenomic development.

DR. B. N. GHOSH APPOINTED CHAIRMAN OF PHARMACOPOEIA COMMITTEE

Dr. B. N. Ghosh, Professor of Pharmacology, R. G. Kar Medical College, Calcutta, has been appointed Chairman of Indian Pharmacopoeia Committee.

The Government of India constituted the Committee in 1948 for the preparation of an Indian Pharmacopoeia with the Director General of Health Services as Chairman. In view of the fact that the pharmacopoeia prepared by the Committee was still in the process of finalisation the Government of India decided that the Committee would continue for a further period of one year with effect from November 23, 1953, with the only change of the Chairman.

NOBEL LAUREATES IN MEDICINE

The Nobel Prize for Medicine and Physiology has been awarded jointly to Professor H. A. Krebs, F.R.S., of Sheffield University, and Professor F. A. Lipmann, of Harvard University, U.S.A. Both are distinguished biochemists who have carried out important studies on intermediary metabolism, and both are refugees from the tyranny that brought their native Germany to ruins.

In 1933 a Rockfeller grant enabled Dr. Krebs to come to Britain as a research student at Cambridge University. Two years later he moved to Sheffield under Sir Edward Mellanby, and in 1945 was promoted professor there and director of a Medical Research Council unit for research in cell metabolism. In 1947 he was elected F.R.S.

According to the official citation Professor Krebs receives his award in recognition of his discovery of the citric acid cycle in the metabolism of carbohydrates—now commonly called the Krebs cycle. In his crucial experiments pyruvic acid, which is formed in the earlier stages of carbohydrate metabolism, was mixed with oxaloacetic acid and was incubated with minced muscle in the absence of air. Citric acid was formed, with the elimination of carbon dioxide. Further losses of carbon dioxide produced α-ketoglutaric acid and succinic acid, and the cylce was then completed through fumaric and malic acids back to oxaloacetic acid, which was ready to combine with more pyruvic acid. In tracing the course of this cycle Krebs was not breaking entirely new ground, but he has solved problems which had long puzzled many workers in a crowded field of research, and he has illuminated what had previously been a maze of obscurities. During the war Krebs showed his abilities in other directions. On the resignation of Dr. Kenneth Mellanby from the Sorby Research Institute he took over the care of a group of conscientious objectors who helped in experiments on vitamin deficiencies for the M.R.C. His enthusiasm helped to sustain the volunteers through the boredom of subsisting through long periods on monotonous diets.

Professor Lipmann receives his part of the prize for his work on co-enzyme A. This factor, which is concerned with the metabolism of two-carbon fragments, plays a part in metabolic processes which are related to the Krebs cycle. The two discoveries for which the award has been shared, however, may be considered as independent in their origin. It was in 1939 that Lipmann was obliged to leave Germany because of Nazi persecution, and he arrived without funds in the U.S.A. A place was found for him at the Massachusetts General Hospital, and in 1941 he became head of the biochemical research laboratory. In 1941 he was appointed professor of biological chemistry at Harvard Medical School.—*Brit. M. J.*, 2: 984, 1953.

BIRTH CENTENARY OF EHRLICH AND VON BAYER

The hundredth birth anniversary of B. Paul Ehrlich (March 14) and Emil von Behring (March 15) will be celebrated from 13th to 16th March 1954, at Frankfurt and Marbung in Germany. The celebrations are being organized jointly by the Paul Ehrlich Institute in Frankfurt, Philipps University, Marburg, and Johann Wolfgung Goethe University, Frankfurt.

CORRESPONDENCE

The Editor is not responsible for any views expressed by the contributors

TOXICITY OF PALUDRINE

SIR,—I write this note to bring to the notice of your readers the toxicity of paludrine (proguanil hydrochloride) employed in the suggested therapeutic and prophylactic dosage.

Case 1—M. D., Hindu female, aged 21 years, came with a typical picture of B. T. malaria. The acute condition was treated with quinine bi-hydrocbloride and subsequently combined treatment was started including paludrine (I.C.I.). On the 7th day of the treatment she was taking paludrine only 0·1 g. T.D.S. After taking the 3rd dose she felt pain in the abdomen which became maximum within three hours. The pain was severe and she was tossing in the bed in agony. She told that the pain was spasmodic in nature with occasional remission. On examination she was found restless. Pulse was 90 per minute, temperature 97°·5F., tongue dry, she was taking frequent sips of water which was subsequently being expelled by the associated vomiting. She had frequent desire for defaecation but very small quantity was passed each time. She was given two saridon tablets but without any effect. Then she was given Trasentin 0·075 g. tablets 2 at a time which quietened her.

Case 2—One H. T., male, aged 48 years, chronic sufferer of malaria took paludrine 0·3 g. tablet in a single dose in the noon and 0·3 g. tablet in the same evening. He felt severe pain in the night 3 hours after the last dose. He felt severe thirst together with ineffectual vomiting. On examination the eyes were found sunken, the abdomen scaphoid, and the tongue dry and coated. The voice was feeble and cramp started in the extremities. The skin was cold and moist with perspiration. The pulse was feeble, rapid and thready, 135 per minute. Blood pressure 95/55 mm. Hg. The patient was treated with morphine hydrochlor 1/3 gr. with atropine sulphate 1/100 gr. i. m. and glucose 200 c.c. i.v.

Three more cases are reported below all appearing in the same family. The affectionate father fed his three children aged 11, 13 and 17, respectively, with 0·3 g. paludrine each. All of them developed pain in the abdomen with dystentery-like symptoms except the last one. The condition was subacute in nature in all the cases. No appreciable change in the pulse was noted. Vomiting and thirst were of mild intensity, occurring twice in the first of these cases. In all the cases paludrine was administered as a prophylactic measure. One case required atropine sulphate 1/150 gr. i.m., the other two requiring no treatment. I am, etc

Kishangang, Purnea, Bihar.

J. N. MUKHERJEE.

A PLAN FOR HEALTH INSURANCE IN RURAL AND URBAN AREAS

SIR,—Any health insurance scheme on the lines of U. K. is not feasible in India in her present economic position. Our ideal of complete health insurance will only be achieved when, India, who lives in villages is able to pay for it. Meanwhile let us try to improve the existing machinery of health relief, I mean the village dispensaries and public health centres. In this we have to take full and voluntary contribution from all concerned; I mean the doctors, the dispensary staff, the Government and the people. Please satisfy them all and our scheme is successful. The doctors must have the amount they can earn for maintaining their standard, the hospital staff must be paid much more than what they earn now, the dispensary must have sufficient medicine to cater to the needs of the people it is serving, the government's burden must not be so high as not to be able to execute the scheme and the people should pay the minimum amount from their little earning for this insurance against disease. How this is possible I suggest to you now. I think each village dispensary serves at least 20,000 people. I give the details of one dispensary:

No private practice should be allowed to any dispensary doctor or his staff. This must be strictly followed.

		Annual Rs.	A.	P.
1.	The pay of the 2 doctors at the rate of Rs. 600/- per month, Rs. 1,200/- ...	14,400	0	0
2.	The pay of his 5 staff at the rate of Rs. 500/- per month ...	6,000	0	0
3.	The maintenance cost of an ambulance van at the rate of Rs. 300/- per month (an ambulance van must be attached to each dispensary)	3,600	0	0
4.	The cost of medicine including all costly medicines like chloromycetin, tibizide, vitamins, etc., etc., for 20,000 people at the rate of Rs. 1,200/- per month ...	14,000	0	0
5.	Miscellaneous expenses ...	600	0	0
	Total ...	39,000	0	0

This figure works out at near about Rs. 2/- per head annnually. If a family consists of 7 persons it will have to pay Rs. 14/- annually which amount it can easily pay in the shape of cash or labour to the village Panchayet which must be the collecting authority. By spending this amount on medicine and the medical service the people can surely be insured against all diseases. The doctors will have a van for making propaganda and educating people in respect of health habits, etc., and treating the sick who cannot attend the dispensary.

This scheme may be managed by the joint efforts of the Medical Association and the Government. In this scheme all the staff are fully paid and sufficient medicines have been provided for the needs of all. The poor people who are dying like cattle will gladly pay this small amount, just as they pay their land rent.

This Health Scheme may be paid from the amount of rent collected after zamindary acquisition. The mattter is of such vital importance that the Government should pay this amount from the excess revenue of the Zamindari Abolition Fund.

This Scheme also applies to the Urban areas where Municipal Personal Tax is going to be levied.

Tajpore (Darbhanga), Bihar. S. N. PD. AGRAWAL.

"HYPOTENSIVE ACTION OF ANOTHER RAUWOLFIA SERPENTINA ALKALOID"

SIR,—We would like to invite your attention to an article published in your journal (December, 1953 issue) under the caption, "Hypotensive action of another Rauwolfia Serpentina Alkaloid". We find that in giving an account of the 'previous clinical studies' in this regard, the article remains silent about the research carried on in our laboratory —the findings whereof were published by Dr. A. K. Roy Chowdhury and Mr. S. M. Ghosh in an article, "A preliminary report on the treatment of Hypertension by isolated pure alkaloid of Rauwolfia Serpentina—1 (*Indian Medical Forum*, 4: 177, June 1953).

In the said article the place of isolated Rauwolfia Serpentina alkaloid in the treatment of cases of high blood pressure was fully discussed. Photomicrographs with E.C.G. studies with this isolated alkaloid have already been published and as a matter of fact, standardised preparation of this isolated alkaloid under the name, "Hypotensin-1" has already been distributed in the market by the undersigned.

In view of the possible misunderstanding that may be created amongst your readers by the article published in your journal, we would request you to kindly publish the contents of this letter. We are, etc.

159/1A, Bowbazar Street, Calcutta 12. A. K. ROY, For A. K. Laboratories.

REVIEWS

THE INDIAN PHARMACEUTICAL CODEX—By B. Mukerji, Director, Central Drugs Research Institute, Lucknow. Published by the Council of Scientific and Industrial Research, New Delhi. Price Rs. 12.

The book is first of its kind published in India with a preface by Col. R. N. Chopra, Chairman of the Pharmaceutical and Drugs Research Committee, where he opines that the book will be used by medical practitioners and pharmacists as a guide for "correct standards, methods of preparation, dosage and other details pertaining to indigenous drugs". Col. Chopra further states that the book has been written on the lines of the British Pharmaceutical Codex and the compilation of this was entrusted to Dr. B. Mukerji.

The book has been very well got up and printed and is a credit to Indian publication.

Naturally, a book which is to act as a standard should be above criticism and the reviewer would have been very happy if it was possible to do so. One feels disappointed to find in a book of this nature a list of over one hundred items under Corrigenda, which contain certain items to be deleted even several lines (pages 34, delete 4 lines from line 11) and many doses given in minims to be in grs. These cannot be classed as printers errors, but show how carelessly it has been compiled. Our disappointment was still great when we observed that besides the items mentioned in the Corrigenda the book contains wrong and confusing statements, some serious mistakes in dosage, and other irregularities of dangerous nature which should not appear in a book meant to be a standard guide. We will quote a few:—On page 7 we read under Aconite as follows "It is also used as a remedy for cough and asthma and as a cardiac stimulant"; on page 26, the following appear under Asafoetida "It produces remarkable effects in the advanced stages of pneumonia and bronchitis of children", on page 29 leaves of Asteracantha "are good for cough, applied for gleet, and in lumbago pains in the joints". Again on page 61, under Centella the following appears "It is used in the treatment of leprosy and is known to ameliorate the symptoms of the disease and to improve the general health. It is recommended in secondary and tertiary syphilis and rheumatism". If any one advertises a preparation of this drug as being valuable in leprosy and syphilis would it be possible for the authorities to prosecute him? Cissampelos (p. 74) is considered a potent alexiteric, etc. On page 102, the following appears "As a circulatory stimulant, ergot deserves more popularity than it has received. It is useful in cerebral or spinal congestion in colliquantine (sic) sweat, in relaxing diarrhoeas, etc." Euonymus (p. 104) "has a powerful digitalis-like action"; Glycyrrhiza (p. 113) has been mentioned as "cures 'vata', inflammation, consumption, abdominal pains and epilepsy". What is 'Vata'? Page 147, Matricaria is "considered stimulant, attenuant and discutient". One would like to know under what conditions these are indicated, and what sort of fever is caused by 'deranged air' so that one can use Oldenlandia as recommended on page 162. Oil of turpentine (p. 193) "appears to have a direct influence upon the disease (typhoid fever). We do not wish to multiply any further.

No dose has been given of Tincture of Stramonium (page 379) nor any mention of its use in Parkinsonism has been made (page 231) and the special dose has not been given.

Wrong equivalents of Metric and Imperial doses have been given in many places. A few examples will make things clear—Page 47, 1 to 4 grm. is 15 to 60 grs. and not ¼ to 1 dr. as given. Page 50, 15 mg. is 1/4 gr. and not 1/2 gr. as mentioned. If the dose is 1/2 gr. then the equivalent metric will be 30 mg. Page 169, 0·2 to 0·6 ml. should be 3 to 10 ms. not 1 to 3 ms. If 1 to 3 min. be the dose then its equivalent will be 0·06 to 0·2 ml. One would like to know which is the proper dose? Page 177, 0·1 to 0·2 ml. is 1½ to 3 ms. not 2 to 4 ms. If 2 to 4 ms. be the dose then the equivalent will be 0·12 to 0·25 ml. On page 300, 4 to 8 ml. has been given as equivalent to 1 to 2 fl. dr. and as 1 to *2 dr.* and again as 60 to *120 mins.* (p. 301). There should be uniformity. On page 374, 4 to 8 ml. has been given as 60 to *120 mins.* while on the same page as 1 to *2 fl. dr.* Page 372, 12 ml. is equivalent to 180 mins. and not 120 mins.; 10 to 20 grs. has been mentioned as equivalent to 0·66 to 1·3 grm. (page 158) and as 0·6 to 1·2 grm. on page 159.

Fractions of grs. should be expressed in mgrm. and not in grms. 1/4 to 1 gr. has been expressed as 0·015 to 0·06 grm. (page 285) and as 0·016 to 0·06 grm. Pages 286, 299, 304, 332. All these should be expressed as 15 to 60 mg.

In the following Monographs the "Heading" bears one and the Preparations another name. This is confusing. Azadirachta, page 32; Bacopa Herba, page 34, Oleum Ajowan, page 163; Trachyspermum, page 240; Tribulus Fructus, page 243; Withania Radix, page 253-254; Xanthocarpum, page 254-255.

The following preparations although mentioned under the "Monographs" have not been described under "Formulary", although these are not in the I.P.L.—Confectio Sennae, page 226; Cataplasma Centellae, page 61; Pulvis Buteae Seminum, page 45; Pulvis Calotropis, page 48; Pulvis Cardamoni Compositus, page 54; Pulvis Curcumae, page 88; Pulvis Daturae Folii, page 90; Pulvis Foenum-Graeci, page 109; Pulvis Amomi, page 15; Vapour Eucalypti Compositus, page 178; Suppositorium Belladonnae, page 40; Sodium and Potassium Margosates, page 33.

We have high regard for Dr. Mukerji and also know how very busy he is with his multifarious work. We are almost certain that he could not devote that much time and attention which is required to compile this book. The responsibility for the publication of this type of book rests with the Pharmaceuticals and Drugs Research Committee of the Council of Scientific and Industrial Research with whose approval it has been published. It should be noted that the publication of the British Pharmaceutical Codex was not entrusted to one man but to several committees.

We feel that the book as it stands cannot be used as a standard work as stated by Col. Chopra in the Preface. On the other hand we are strongly of the opinion that it should be withdrawn and properly edited before much harm is done.

PHARMACOLOGY AND THERAPEUTICS—Part Two—Recent advances in Chemotherapy and Treatment with Special Reference to Tropical Diseases (B. P. 1953)—By M. A. Kamath. Published by the Author Pp. 172)with Appendix I and II. Rs. 5/-. 1953.

This little volume forms part II of the original book 'Pharmacology and Therapeutics' by the Author. The present volume deals mainly with the recent advances in chemotherapy with special reference to Tropical diseases. Different aspects of the modern advances have been discussed in 12 chapters and the wealth of information that can be gathered is good for a small volume like this. But one would expect some information regarding the modern 'Hypotensive' and 'Muscle relaxant' drugs and drugs that are being used against the different malignant conditions, e.g., in carcinoma, leukaemia, etc.

The quality of reproduction is otherwise good; the printing mistakes, even a few dangerous ones, still exist, e.g., *'Streptococcus vanezuele'* (in place of *Streptomyces venezuele*) as a source of chloromycetin (p. 15). Since the publication is a very recent one, one would not expect such statements as *"Strep. viridis* of Acute Rheumatic Fever" (which is now almost accepted to be due to *Str. haemolyticus*), *Neisseria catarrhalis* of influenzar (Sic.) pneumonia" (*N. cat.* is feebly pathogenic), "Virus infections" do not include rat-bite fever (which is due to *Spirillum minus*) (p. 10), and "Epidemic typhus" is not synonymous with Brill's disease, only a variety of it (p. 95).

Amongst the different preparations of penicillin P.A.M. (Procaine penicillin with 2 per cent aluminium monostearate) should have received more attention; oral form of therapy has probably been given an undue importance. Toxicity of the different antibiotics has been very poorly dealt with; dihydrostreptomycin is no longer considered to be safer than streptomycin (p. 12). The purpose of mentioning "Erythromycin" about which the author could give no information except the name only is difficult to follow (p. 22).

One cannot reconcile how 'aromatic diamidines' could be grouped under 'sulpha-drugs' (p. 30) and how 'Quiniplex' 'Esanofele' can be classed as "Other Later Synthetic Antimalarials" and why 'Atebrin', 'Proguanil' were regrouped under the same heading although described earlier in the same chapter (p. 47-48).

'Typhocid' and similar other drugs have been described as a "potent drug against typhoid, cholera . . ." (p. 29). The most discomforting feature in the book is prominence of the proprietary names and preparations. In fact a separate chapter (XII) has been devoted for the purpose. The list of "Recent Non-official Remedies and Specialities" (p. 56) includes such items as 'Nepenthe', 'Dilaudid', 'Resyl' . . etc. which are pretty old in the market and 'Seconal' and 'Prostigmine' which are official in B.P. 1953 and 1949 respectively the former as Quinalbarbitone and the latter as Neostigmanine. Similarly many other drugs have been included as "Non-official remedies" which are official in 1953 B.P.

YOUR QUESTIONS

Q.—Are therapeutic injections of placental extract likely to cause transient or more permanent hormonal sterilization in women of reproductive age?

A.—No. Placental extracts are not known to cause either temporary or permanent sterilisation in the female. Its use for this purpose cannot be commended.

Q.—In a mild case of hirsuties in which operative treatment is considered necessary what is the best treatment that could be given for growth of pigmented hair on the face. Is the result of electrolysis permanent? How is bleaching effected by hydrogen peroxide? Is depilating creams harmful in any way in the long run?

A.—ACTH or Cortisone in adequate dosage is worth a trial. 25-50 mg. daily for at least a month along with potchloride by mouth.

Electrolysis is one of the best lines of treatment. It is permanent provided the operation is conducted carefully and repeated where necessary.

Hydrogen peroxide is supposed to oxidise melanin into a colourless compound. others believe that molecules of oxygen get into the hair shaft and mask the melanin.

These are likely to be harmful if used for a prolonged time. The creams affect the hairshaft but do not destroy the hair follicles. So by repeated epilation, hair shafts grow stronger and thicker. In some sensitive skin or by continued use it may produce local or generalised dermatitis of the allergic type.

SUPPLEMENT

Journal of the Indian Medical Association

VOL. XXIII, No. 6 CALCUTTA MARCH, 1954

ASSOCIATION NOTES

I. M. A. WORKING COMMITTEE

I.M.A WORKING COMMITTEE—PROCEEDINGS OF THE 49TH MEETING OF THE WORKING COMMITTEE OF THE INDIAN MEDICAL ASSOCIATION HELD AT HYDERABAD (DECCAN) IN THE OSMANIA UNIVERSITY ARTS COLLEGE ON THE 24TH DECEMBER, 1953.

MEMBERS PRESENT: (*a*) *Ex-officio members*: 1. Dr. B. V. Mulay (Sholapur), President (in the chair); 2. Dr. C. S. Thakkar (Bombay), Senior Vice-President; 3. Dr. S. C. Sen (New Delhi), Hony. General Secretary; 4. Dr. A. P. Mittra (New Delhi), Hony. Joint Secretary; 5. Dr. S. N. Mitter (New Delhi), Hony. Joint Secretary; 6. Dr. R. Sinha (Calcutta), Hony. Joint Secretary; 7. Dr. A. D. Mukharji (Calcutta), Editor, Journal, I.M.A. (*b*) *Representatives from Provincial Branches*: 8. Dr. P. C. Duarah, Assam Provincial Branch; 9. Dr. E. S. Reddy, Andhra Provincial Branch; 10. Dr. P. K. Chatterjee, Bengal Provincial Branch; 11. Dr. J. Mojumdar, Bengal Provincial Branch; 12. Dr. A. K. Bose, Bengal Provincial Branch; 13. Dr. S. S. Ugrankar, Bombay Provincial Branch; 14. Dr. U. B. Narayan Rao, Bombay Provircial Branch; 15. Dr. S. Samaddar, Bihar Provincial Branch; 16. Dr. Damodar Prasad, Bihar Provincial Branch; 17. Dr. R. C. Goulatia, Delhi Provincial Branch; 18. Dr. P. R. Trivedi, Gujarat and Saurashtra Provincial Branch; 19. Dr. B. G. Mehta, Gujarat and Saurashtra Provincial Branch; 20. Dr. G. V. Pandit, Madhya Pradesh Provincial Branch; 21. Dr. Amar Nath Ghei, Madhya Bharat Provincial Branch; 23. Dr. T. K. Dayalu, Mysore Provincial Branch; 24. Dr. F. C. Shori, Punjab State Branch; 25. Dr. P. L. Kapoor, Punjab State Branch; 26. Lt.-Col. T. S. Shastry, South Indian Provincial Branch; 27. Dr. K. C. Nambiar, South Indian Provincial Branch; 28. Dr. P. A. S. Raghavan, South Indian Provincial Branch; 29. Dr. R. Kesavan Nair, Travancore-Cochin Provincial Branch; 30. Capt. H. N. Shivapuri, Uttar Pradesh State Branch; 31. Dr. S. N. Saxena, Uttar Pradesh State Branch; 32. Dr. H. Hukku, Uttar Pradesh State Branch; 33. Dr. K. K. Sen Gupta, Bengal Provincial Branch. (*c*) *Co-opted members*: 33. Dr. J. N. Bahadur, (New Delhi); 34. Dr. Chamanlal M. Mehta, (Bombay); 35. Dr. D. V. Venkappa, (Madras); 36. Dr. B. K. Vinchure, (Nagpur); 37. Dr. P. K. Guha, (Calcutta); 38. Dr. A. P. Shukla, (Ahmedabad). (*d*) *Invited members*: 39. Dr. S. W. Hardikar (Hyderabad-Deccan); 40. Dr. B. Chandra, (Hyderabad) (Deccan); 41. Dr. U. R. Pargaonker (Hyderabad-Deccan).

Dr. B. V. Mulay, the President, took the chair.

1. *RESOLUTION OF CONDOLENCE*:

The following condolence resolution was unanimously passed, all members standing and observing silence for one minute:—

"This meeting of the Working Committee of the I.M.A. places on record its deep sense of sorrow at the sad demise of the following members of the Association and conveys its heartfelt sympathy to the members of the bereaved families:—

1. Dr. P. R. Sen-Gupta (Calcutta); 2. Dr. Sunil C. Bose (Calcutta); 3. Dr. (Miss) J. Grant (Seoni); 4. Dr. F. B. Billimoria (Nagpur); 5. Dr. R. S. Deshpande (Akola); 6. Dr. Aghore Nath Ghosh (Calcutta).

2. *MESSAGES OF INABILITY TO ATTEND THE MEETING*:

Messages of inability to attend the meeting received from the following members were read:—

1. Dr. C. O. Karunakaran (Trivandrum); 2. Dr. B. Tirumal Rao (Vizagapatam); 3. Dr. Jivraj N. Mehta (Bombay) co-opted; 4. Dr. M. S. Mehkri (Bangalore) co-opted; 5. Dr. T. N. Bannerjee (Patna) co-opted; 6. Dr. H. R. Dawar (Delhi); 7. Dr. D. G. Ojha (Alwar).

3. *CONFIRMATION OF THE PROCEEDINGS OF THE LAST MEETING OF THE WORKING COMMITTEE OF THE I.M.A. HELD AT LUCKNOW ON THE 5TH AND 6TH OCTOBER, 1953 (COPY CIRCULATED)*.

The house decided that in item No. 4 (2) (c), in last but two lines, the word 'small' be deleted.

The recommendations of the U. P. State Branch regarding the Hony. System were all accepted.

The Proceedings of the 48th meeting of the Working Committee held at Lucknow subject to the above corrections, were confirmed.

4. *BUSINESS ARISING OUT OF THE PROCEEDINGS OF THE LAST MEETING*:

(1) *Matters concerning Pharmaceutical and Chemical Industry.*

Noted; will be brought again when necessary.

(2) *Revision of Scales of Fees for examination of Life Insurance Cases.*

Dr. Chamanlal M. Mehta's letter was read out and the matter ended with this. This matter was postponed till the time better situation arose.

(3) *Health Ministers' Conference and Scheme for training of Village Vaidyas.*

Capt. H. N. Shivapuri explained that this scheme should be separated from the training of Village Vaidyas. Dr. Mulay explained that we were considering the training of Technicians, and this scheme had nothing to do with the training of vaidyas.

Dr. Pandit (Madhya Pradesh) Dr. Hardikar (Hyderabad) and Dr. Kesavan Nair took part in the discussion.

Dr. Mulay suggested that we wanted this to be started in all the States and two years' course was necessary for good training. Question of practice did not arise.

Dr. Mulay suggested that an undertaking be taken from such students at the beginning that they will not be allowed to practice.

With the addition of Dr. Mulay's suggestion, the scheme as presented was accepted.

(4) *Refusal of Indian Railways to accept Medical Certificates issued by private medical practitioners to Railway employees.*

Dr. A. P. Mittra, the Hony. Joint Secretary explained the matter and it was decided to postpone it and bring it again before the Working Committee when further progress was made in the matter, at the discretion of the President.

(5) *Health Ministry's List of drugs.*

Postponed.

(6) *Therapeutic Requirements of India.*

To wait till the report of the Bhatia Committee was available. Noted.

Dr. S. C. Sen informed the house that he was asked to appear before the Committee and wanted to know the opinion of the House.

It was decided that Dr. S. C. Sen might appear before the Committee if he was asked and explain the viewpoint of the Indian Medical Association.

(7) *Further consideration of Bombay Public Trust Act* 1950.

Postponed till the arrival of Dr. Panwala and Dr. Sengupta.

(8) *Dr. Mulay's letter re. rigid observance of Rules reg. M. A. Forms and C. F. C.*

To be considered by the Central Council along with Draft Rules of the I.M.A.

(9) *Patenting of the crest of the I.M.A.*

Dr. Mulay suggested that the branches may again be asked to give their opinions regarding the change of crest and the design and the use of crest on the boards of the doctors. The matter would be brought to the Working Committee when progress was made and decision of the Central Council would be final.

Dr. S. C. Sen explained the background of the question. Dr. Hukku and Dr. R. C. Goulatia took part in the discussion and spoke in favour of changing the crest.

The House accepted Dr. Mulay's suggestion.

(10) *Increase of C. F. C.*

To be considered with Draft Rules of the I.M.A.

(11) *Delegation to next Commonwealth Conference.*

Dr. S. C. Sen explained in detail, the implications and the expenses to be incurred. He informed the house that India's share of contribution will be £80—100. He explained the usefulness of sending the delegate, in view of number of candidates going abroad for education facilities.

Capt. R. C. Goulatia suggested that the matter be referred to the Central Council, supported by Dr. B. L. Kapoor. Dr. Pandit supported strongly and recommended the sending of the Delegate.

The proposal of Dr. R. C. Goulatia was put to vote and it was lost.

Dr. Joshi's proposal was accepted by majority of votes that the issue of sending a delegate to Commonwealth Conference be accepted and be forwarded to Central Council with this recommendation of the Working Committee."

(12) *I.M.A.'s representatives in the Regional Offices of the Employees' State Insurance Corporation.*

Noted. The Central Office has written to the Employees State Insurance Corp. on this question and the reply is awaited.

(13 *Dr. Chamanlal M. Mehta's letter regarding legal liabilities of doctors of E. S. Insur. Corporation.*

Noted.

(14) *Letter No. 2/1132/52-53 dated 8/7/53 of the Hony. Secretary, Assam Provincial Branch regarding propaganda grant of Rs. 1,000/-.*

Dr. A. P. Mittra read out the letter from the Assam Prov. Branch, and explained the matter.

Dr. Mulay suggested that Assam Provincial Branch be treated as a special case due to their difficulties of travelling expenses, etc. Dr. Mulay's suggestion of granting Rs. 500/- to start with to be utilized by Dr. P. C. Duarah for propaganda purpose was accepted.

(15) *Resolution of Dr. T. S. Tirumurthi regarding comments in the Radiological Journal on the opinion of the I.M.A., regarding Draft Radiology Council Bill.*

Dr. A. P. Mittra read out the letter of late Dr. Tirumurthi and produced the copy of the Journal and read out the editorial of Dr. Sethna. The following members were requested to meet and report to the afternoon session their exact crystalised ideas on the issue.

1. Dr. Chamanlal M. Mehta (Bombay).
2. Dr. R. C. Goulatia (Delhi).
3. Dr. T. K. Dayalu (Bangalore).
4. Dr. P. A. S. Raghavan (Trichy)
5. Dr. C. S. Thakar (Bombay).

REPORT OF THE SUB-COMMITTEE

Report of the Sub-Committee appointed by the house previously on the article of Dr. Sethna in the Radiology magazine was considered. The following resolution was submitted by the Sub-Committee and was accepted by the house:—

"The Working Committee regrets to find the remarks made by Dr. Sethna in the Indian Journal of Radiology in the Editorial on proposed Radiology Act. Dr. Sethna makes allegations against the I.M.A. that it passed its resolution on the subject without proper study of the Radiology bill. The Working Committee feels that Dr. Sethna, as an official of the Radiological Association and as a Representative of the Bombay Provincial Branch at the Patna Working Committee and Central Council meetings should have kept himself to the facts and should have been discrete and dignified in his language.

The Working Committee refutes his allegations and resents the remarks made by him".

(16) *Annual Report for the year* 1952-53.

It was agreed that Dr. Samaddar's proposal to put the number of branches under the Provincial branches and number of members will be incorporated in the Report.

Dr. Shivapuri objected to the last para. on page 2, 8 (a) and wished it to be deleted.

Dr. Thakkar's draft was read out in this connection. It was agreed that the draft may be concised and incorporated as against the last para on page 2, item No. 8(a) of the Annual Report.

Dr. R. C. Goulatia said that reference of Dr. S. C. Sen's letter may be mentioned in the report.

(17) *Spiritous Preparations Bill.*

Dr. A. P. Mittra informed the house that only a few branches had replied.

Dr. Mulay agreed that the matter was an all-India question. It was decided that the office should get both the Drug Act and the Prohibition Act and the matter would be discussed in the Working Committee again at a later meeting.

(7) *Further consideration of Bombay Public Trust Act* 1950.

Dr. Panwala was requested by the President to explain the matter with reference to recent negotiations.

The House agreed to Dr. Panwala's suggestion that if an association had certain activities confined to and for the benefit of the members only and had certain other activities relating to public, religious and charitable purpose and the accounts in respect of these activities were kept separately, the funds and donations in respect of the latter activities only would come under tthe purview of the Bombay Public Trust Act 1950.

It was agreed that the letter be circulated to Territorial Branches covered by the State of Bombay.

5. (1) *FORMATION OF NEW BRANCHES.* (2) *REVIVAL OF BRANCHES.* (3) *BRANCHES DECLARED DISSOLVED OR DEFUNCT.* (4) *BRANCHES DECLARED SUSPENDED:*

(1) *The formation of following local branches was approved of:—*

Name of Local Branch	*Prov. Branch*	*No. of members*	*Date of formation*
1. Pusad	Madhya Pradesh	7	1-10-53
2. Kandi	Bengal	9	do.
3. Khawang-Moran-Sepon	Assam	5	do.
4. Nandur Bar	M. & Karnatak	9	do.

(2) *No branch was revived since the last meeting of the W/C.*

(3) *The following branches were declared 'defunct' as recommended by the provincial branches concerned:—*

1.	Phiwani	Punjab	1-10/53
2.	Sonepat	do.	do.
3.	Chirala	Andhra	do.

(4) *No branch was declared suspended.*

6. *CONSIDERATION OF C. F. C. ARREARS:*

Five Provincial branches were in C. F. C. arrears for the year 1951-52.

Discussion took place regarding writing off of the above arrears in which Dr. Sen explained the difficulties. Dr. Mulay was of the opinion that the rules should be strictly followed.

After discussion, Dr. Joshi proposed that a sum of Rs. 876-8 as C. F. C. arrears be written off. The house agreed to the proposal.

7. *ADOPTION OF AUDITED ACCOUNTS:*

(1) *Central office (from 1-7-53 to 30-9-53).*

(2) *Annual Accounts for the year 1952-53 (Central office).*

(1) The quarterly accounts of the Central office for the period ended 30-9-53 were approved and adopted.

(2) The Annual Audited accounts of the Central Office for the year 1952-53 ending 30-9-53 as circulated were accepted (Proposed by Dr. Shivapuri and seconded by Dr. Siddhu).

Dr. Sen proposed that Research Fund account may be utilized. The house agreed to it and it was decided that applications should be invited for one research scholarship. The house agreed to the proposal of asking for the choice of subject from the candidates, to be later scrutinised by the Sub-Committee to be appointed by the President, when necessary.

The House authorised the adjustment entries under the Reserve Fund Account, made in accordance with the revised rules of 1949.

The house agreed to sanction the supplementary grant incurred in postage and bank commission for Rs. 1,188-3-3 and Rs. 18-10 respectively.

It was agreed that every application for internship sent to the Central Office must be accompanied by Rs. 10/- instead of Rs. 5/-.

Dr. Chamanlal proposed that Rs. 10/- should accompany all the applications recommended or unrecommended. Of the total amount received by the provincial branches, 10 per cent may be retained by the Provincial Branches. Applications recommended or unrecommended must all be deposited with the Central Office.

7. *AUDITED ACCOUNTS OF JOURNAL DEPARTMENT:*
To be considered by the Central Council.

8. *CONSIDERATION OF BUDGET OF CENTRAL OFFICE 1953-54:*

Dr. S. C. Sen explained different items of the Budget Estimate.

Dr. Chamanlal M. Mehta moved the following resolution:—

"In order to study the position of the Indian Medical Association in various parts of the country, to bring the members of the Branches in close contact with the I.M.A. Central Officials, to supply an opportunity to discuss the problems of the Branches with the Head of the Association and thus to enliven the I.M.A. as a whole and strengthen its organisation, the Working Committee recommends the Central Council to request the President of the I.M.A. to visit during the course of the next year, as many important Branches of the I.M.A. as could be possible.

It also recommends that the travelling expenses of the President be met from the funds of the Association. That the Central Council should make the necessary provision in the next year's budget".

The resolution was seconded by Dr. Joshi and the house duly accepted it.

Dr. Joshi proposed that Rs. 5,000/- be provided in the Budget earmarked for the touring expenses by air, train or road of the President or his nominee. The House accepted Dr. Joshi's proposal.

The Budget was accepted by the House.

9. *CONSIDERATION OF RESOLUTION RECEIVED FROM THE LOCAL, AS WELL AS PROVINCIAL BRANCHES OF THE I.M.A.*

Left for the consideration of the Central Council.

10. *LETTER NO. E/54/53-54 DATED 4/11/53 OF DR. P. K. GUHA ASST. EDITOR, JOURNAL OF THE I.M.A. REGARDING THE MAINTENANCE OF SECRECY REGARDING ELECTION OF PRESIDENT AND THE THREE VICE-PRESIDENTS:*

It was decided that a directive be given to the branches not to mention in the proceedings the names of President and Vice-Presidents, for whom they cast the votes, as this was confidential and should not be published in the Journal.

11. *DATES AND VENUE OF MEETINGS OF THE WORKING COMMITTEE FOR 1954:*

It was decided to fix the following dates and venues for the meetings of the Working Committee during the next year.

April, 1954	...	Trichy.
July, 1954	...	Jaipur (if considered to be necessary)
October, 1954	...	Bangalore
December	...	Venue of Annual Conference

(The exact dates to be decided upon by the President and the Hony. General Secy.)

12. *CONSIDERATION OF THE APPLICATIONS FROM THE STAFF OF THE JOURNAL DEPARTMENT AND CENTRAL OFFICE OF THE I.M.A. FOR AN INCREASE IN THE RATE OF DEARNESS ALLOWANCE:*

Dr. A. D. Mukharjee the Editor, explained the conditions in Calcutta and conditions of the members of staff of Journal Dept. Dr. Chamanlal M. Mehta supported and proposed an increase of Rs. 10/- in the D. A. of the staff of Journal and Central Offices with effect from 1st October, 1953. Dr. A. P. Mittra seconded.

The proposal of Dr. Mehta was accepted.

13. *CONSIDERATION OF LETTER NO. 649 DATED 19/11/53 FROM THE HONORARY AUDITORS, M/s. KHANNA & ANNADHANAM, CHARTERED ACCOUNTANTS, DELHI REGARDING INCREASE IN THEIR HONORARIUM:*

It was resolved that the amount of honorarium to the auditors at the Journal and Central offices be each increased to Rs. 250 and request be made to them to accept this slight increase in their honorarium.

14. *CONSIDERATION OF THE NEW DRAFT RULES AS APPROVED BY THE WORKING COMMITTEE AND THE AMENDMENTS PROPOSED:*

Forwarded to the Central Council for consideration.

15. *LETTER NO. 191/76/53-54 DATED 26/11/53 OF THE HONY. SECRETARY, U. P. PROVINCIAL BRANCH REGARDING MEMBERS INVITED TO ATTEND THE WORKING COMMITTEE MEETINGS AND THEIR T. A., ETC.:*

The matter was dropped at the request of the Hony. Secretary of U. P. State Branch.

16. *NOMINATION OF DELEGATES. (2) ALTERNATE DELEGATES AND (3) OBSERVERS FOR THE 8TH GENERAL ASSEMBBLY OF THE WORLD MEDICAL ASSOCIATION TO BE HELD IN ROME, ITALY FROM SEPT. 26, 1954 TO OCTOBER 2, 1954.*

Dr. S. C. Sen was elected as the Delegate.

As regards 2 and 3, it was left to the President to ask for names and select the alternate delegates and observers.

17. *AFFILIATION OF BELLARY DIRECT BRANCH WITH THE MYSORE PROV. BRANCH*:

The information given to the house that the Bellary Branch had become a branch of the Mysore Provincial Branch was noted.

18. *LETTER NO. 104/53-54 DATED 17/11/53 FROM THE HONY. SECRETARY BIHAR STATE BRANCH REGARDING FORMATION OF DIRECT BRANCH AT BIRATNAGAR*:

Dr. A. P. Mittra gave the house information that confirmation of the branch was held up on the request of Dr. Damodar Prasad, the Hony. Secretary of Bihar State Branch. Some more time was given to enable them to negotiate with the Branch. In the meantime Biratnagar Branch would continue to be formally recognised.

19. *INFORMATION ON VARIOUS OTHER POINTS TO BE GIVEN TO THE WORKING COMMITTEE*:

(a) Dr. Sen informed the Committee the inability of a B.M.A. representative to attend the I.M.A. Conference in pursuance of an invitation extended by Dr. Sen at the last B.M.A. Council Meeting.

(b) Correspondence re. the recognition by the Indian Medical Council of the training received by our members in U. S. A. and Canadian hospitals as Residents:

Discussion followed and it was resolved to approach all the Universities separately.

(c) Memorandum sent to the Taxation Enquiry Committee regarding the taxation of self-employed persons was read out by the Hon. General Secretary.

(d) Dr. S. C. Sen informed the house of the grant of Rs. 3,000/- from the Central Government for "Your Health".

(e) Employees State Insurance Scheme.

Dr. Mulay reiterated that we should stick to our previous decisions regarding this matter, specially with regard to supply of costly medicines.

Dr. Chamanlal M. Mehta covered the ground from all points of view. He submitted that the house should revise its previous decision on this question.

It was decided to place the matter before the Central Council.

With a vote of thanks, the meeting came to an end.

DR. B. V. MULAY, *President.*

S. C. SEN, *Honorary General Secretary.*

I.M.A. CENTRAL COUNCIL—ANNUAL MEETING

I. M. A. CENTRAL COUNCIL—Proceedings of the 14th Annual meeting of the Central Council of the Indian Medical Association held at Hyderabad (Deccan) in the Osmania University Arts College Lecture Theatre on the 25th and 26th December, 1953.

MEMBERS PRESENT: 1. Dr. B. V. Mulay (Sholapur) President (in the chair); 2. Dr. C. S. Thakkar (Bombay) Senior Vice-President; 3. Dr. S. C. Sen (New Delhi) Hony. General Secretary; 4. Dr. A. P. Mittra (New Delhi) Hony. Joint Secretary; 5. Dr. S. N. Mitter (New Delhi) Hony. Joint Secretary; 6. Dr. R. Sinha (Calcutta) Hony. Joint Secretary; 7. Dr. A. D. Mukharji (Calcutta) Editor, Journal of I.M.A.; 8. Dr. J. N. Bahadur (New Delhi) Hony. Asst. Secretary; 10. Dr. Chamanlal M. Mehta (Bombay); 11. Dr. M. A. Panwala (Ghatkopar, Bombay); 12. Dr. B. S. Srinivasa Murthy (Mandya); 13. Dr. T. S. Shastry (Madras); 14. Dr. M. C. Nanjappa (Davangere); 15. Dr. B. V. Ramaswami (Bangalore); 16. Dr. V. N. Krishnamurthy (Bangalore); 17. Dr. M. S. Mekri (Bangalore); 18. Dr. D. Shamanna (Hassan); 19. Dr. H. V. Upadhye (Dharwar); 20. Dr. Dattatraya Vasudeo Chapekar (Gadag); 21. Dr. B. R. Shama Rao (Shimoga); 22. Dr. Mirle Puttaiya (Bangalore); 23. Dr. B. N. Rajagopal (Shimoga); 24. Dr. Sisir Ranjan Sengupta (Calcutta); 25. Dr. Naresh Chandra Banerji (Calcutta); 26. Dr. Pabitra Mohan Roy (Dum Dum); 27. Dr. Mohini Mohan Roy (Kotalpur); 28. Dr. Krishna Prasad De (Garbeta); 29. Dr. R. P. De (Chaibassa); 30. Dr. A. K. Ghosh (Chaibassa); 31. Dr. S. K. Dutt (Calcutta); 32. Dr. J. C. Giri (Midnapore); 33. Dr. Monindra Nath Das (Midnapore); 34. Dr. Jatish Ghosh (Ghatal); 35. Dr. Dilip Sen (Patna); 36. Dr. Suresh C. Roy (Patna); 37. Dr. A. K. Sen (Patna); 38. Dr. Hari Anugrah Narain (Patna); 39. Dr. Abanidhar Chakraborty (Daltonganj); 40. Dr. Thakur Raj Nath Singh (Gopalganj); 41. Dr. A. C. Das Gupta (Bihar Shariff); 42. Dr. S. S. Sahay (Ranchi); 43. Dr. S. N. Sinha (Ranchi); 44. Dr. M. K. Mukherji (Jabalpore); 45. Dr. T. N. Saha (Forbesganj); 46. Dr. S. Bhattacharya (Bettiah); 47. Dr. Hari Shankar Prasad (Motihari); 48. Dr. H. C. Lakshminarayana (Tamkur); 49. Dr. L. P. Verma (Chapra); 50. Dr. S. R. Singh (Nellore); 51. Dr. C. M. Joseph (Cochin); 52. Dr. I. B. Patwari (Bhavnagar); 53. Dr R. M. Kamdar (Bhavnagar); 54. Dr. T. M. Kumaraswami (North Arcot); 55. Dr. K. Karibasappa (Chitaldroog); 56. Dr. T. N. Ghosh (New Delhi); 57. Dr. M. J. Trivedi (Wardha); 58. Dr. J. P. Ganguli (New Delhi); 59. Dr. C. V. Narayana Iyer (Malabar); 60. Dr. Sunil Kumar Sen (Berhampore, West Bengal); 61. Dr. Ram Narayan Bhattacharyya (Berhampore); 62. Dr. S. N. Roy (Dhanbad); 63. Dr. J. H. Kunchur (Sangli); 64. Dr. T. V. Siranandan (Coimbatore, Madras); 65. Dr. (Major) H. C. Mallik (Dhanbad); 66. Dr. T. V. Srinivasan (Trichy); 67. Dr. K. Sengupta (Calcutta); 68. Dr. R. Kesavan Nair (Trivandrum); 69. Dr. E. S. Reddy (Nellore); 70. Dr. S. P. Nath (Cachar); 71. Dr. P. K. Roy Chowdhury (Baruipur-Rajpur); 72. Dr. Sukomal Sen (Calcutta); 73. Dr. Dhirendra Nath Ghoshal (Calcutta); 74. Dr. P. B. Anangarachari (Madras); 75. Dr. T. S. Balasubramanayam (Trichy); 76. Dr. S. P. Bhacca (Surat); 77. Dr. V. Iranatham (Trichy); 78. Dr. P. Narayana Menon (Trichur); 79. Dr. N. A. Iyenger (Madras); 80. Dr. R. S. Shamugasundaran (Salem); 81. Dr. N. K. Sampath (Coimbatore); 82. Dr. P. K. Chatterji (Calcutta); 83. Dr. A. K. Bose (Calcutta); 84. Dr. P. C. Duarah (Gauhati); 85. Dr. H. K. Choudhury (Jorhat); 86. Dr. Chhabil Das (Ludhiana); 87. Dr. A. K. Shah (Hyderabad); 88. Dr. S. W. Hardikar (Hyderabad); 89. Dr. Rajeswar Prasad (Arrah); 90. Dr. Man Singh (Lucknow); 91. Dr. Bolar Thungamma (Banaras); 92. Dr. M. M. S. Siddhu (Lucknow); 93. Dr. H. N. Shivapuri (Kanpur); 94. Dr. S. N. Saxena (Kanpur); 95. Dr. Navin Chandra (Kanpur); 96. Dr. H. Hukku (Lucknow); 97. Dr. Sudhamoy Banerjee (Nabadwip); 98. Dr. A. K. Kamdin (Jabalpur); 99. Dr. L. Barooah (Nowgong); 100. Dr. P. R. Sastry (Bezwada); 101. Dr. U. B. Narayanarao (Bombay); 102. Dr. G. V. Joshi (Hubli); 103. Dr. R. K. Burse (Hubli); 104. Dr. Krishna Murty (Vizagapatam); 105. Dr. Amar Nath Ghei (Gwalior); 106. Dr. Nalini Kanta Sarma (Gauhati); 107. Dr. Anandeswar Barthakur (Gauhati); 108. Dr. E. Sreenivasan Reddy (Kurnool); 109. Dr. T. Y. Narayana Rao (Bellary); 110. Dr. S. N. Ghosh (Dhanbad); 111. Dr. K. Rangacharyulu (Hyderabad); 112. Dr. V. B. Davalbhakta (Jalgaon); 113. Dr. R. V. Mhaskar (Amalner); 114. Dr. N. K. Prasad (Dhanbad); 115. Dr. R. A. Bhagwat (Indore); 116. Dr. D. N. Khandekar (Indore); 117. Dr. S. N. Pathak (Indore); 118. Dr. Subodh Mitra (Bhagalpur); 119. Dr. Baleshwar Prasad (Bhagalpur); 120. Dr. Ban Behari Choudhury (Bishnuput); 121. Dr. A. S. Sarva (Kistna); 122. Dr. Bindeshwari Pd. Sinha (Nawadah); 123. Dr. Ram Murti Sharam (Dehra Dun); 124. Dr. Jagmohan Singh (Dehra Dun); 125. Dr. Sushil Chandra Banerji (Saharanpur); 126. Dr. Samar Rai Chowdhury (Calcutta); 127. Dr. Mangha Ram Kalani (Lucknow); 128. Dr. S. R. Raja Ram (Salem); 129. Dr. Shiv Kumar (Bikaner); 130. Dr. T. A. Dorai Rayan (Kolar); 131. Dr. Dubesh Mukherjee (Calcutta); 132. Dr. V. R. Bhat (Mangalore, S. Kanara); 133. Dr. K. R. Kini (Mangalore); 134. Dr. S. Banerji (Jadavpur); 135. Dr. Nitai Charan Banerji (Tarakeshwar); 136. Dr. Kali Pada Ganguli (Ghugudanga); 137. Dr. Lila Raj (Delhi); 138. Dr. Tulsi Pada Roy Choudhury (Gocharan); 139. Dr. T. M. Pillay (Tanjore); 140. Dr. J. N. Maitra (Jagatdol); 141. Dr. H. K. Sanyal (Dooars); 142. Dr. S. C. Ghose (Dooars); 143. Dr. Basudeb Maitra (Howrah); 144. Dr. Ganesh Chandra Sarkar (Bolpore); 145. Dr. S. N. Banerji (Bokaro); 146. Dr. Damodar Prasad (Patna); 147. Dr. S. Samaddar (Patna); 148. Dr. J. Mojumdar (Calcutta); 149. Dr. J. C. Dasgupta (Chapra); 150. Dr. P. Hari Vital Rao (Guntur); 151. Dr. Anil Kumar Maitra (Calcutta); 152. Dr. Piyas Kanti Das (Calcutta); 153. Dr. Gopi Krishna Chakravarti (Bagnann); 154. Dr. Bimal Ukil (Calcutta); 155. Dr. N. Bhattacharjee (Calcutta); 156. Dr. Jivraj N. Mehta (Bombay); 157. Dr. T. J. Lalwani (Bombay);

158. Dr. L. N. Srivastava (Allahabad); 159. Dr. D. R. Khurana (New Delhi); 160. Dr. R. C. Goulatia (New Delhi); 161. Dr. R. G. Ramabadran (Madura); 162. Dr. V. Govindan Nair (S. Malabar); 163. Dr. R. K. Malhoutra (Amritsar); 164. Dr. B. L. Kapur (Ludhiana); 165. Dr. G. V. Pandit (Yeotmal); 166. Dr. N. R. Pandey (Nagpur); 167. Dr. B. K. Vinchure (Nagpur); 168. Dr. Ved Prakash (New Delhi); 168. Faqir Chand Shori (Amritsar); 170. Dr. Khushi Ram Mehra (Amritsar); 171. Dr. Rattan Singh Bhalla (Patiala); 172. Dr. Ramchandra Vishwanath Sathe (Bombay); 173. Dr. S. S. Ugrankar (Bombay); 174 Dr. S. Lahiri (Banaras); 175. Dr. S. N. Mukherji (Banaras); 176. Dr. V. G. Patankar (Barsi); 177. Dr. P. A. S. Raghavan (Trichy); 178. Dr. Himansu S. Chakravarti (Calcutta); 179. Dr. S. N. Das (Dooars); 180. Dr. Sasanka Mohan Chatterjee (Budge Budge); 181. Dr. Basanta Kumar Ghosh (Barrackpore); 182. Dr. Nanilal Ghosh (Howrah) 183. Dr. Ram Rakha Dhir (Jullundur); 184. Dr. P. K. Chatterjee (Ballia); 185. Dr. Y. V. Ramanamurty (Vizianagram); 186. Dr. M. V. Krishna Rao (Visakhapatnam); 187. Dr. M. D. Panchura (Bombay West Sub.); 188. Dr. T. Chindanandam (Guntur); 189. Dr. T. K. Dayalu (Bangalore); 190. Dr. A. N. Roy (Calcutta); 191. Dr. Amir Chand Narula (Delhi); 192. Dr. Sibdas Bhattacharya (Bengal); 193. Dr. S. C. Roy (Hooghly); 194. Dr. Madan Prasad (Darbhanga); 195. Dr. R. K. Narayan (Jehanabad); 196. Dr. S. N. Pd. Agarwal (Samastipur); 197. Dr. Dharani Dhar Prasad (Aurangabad); 198. Dr. S. M. Rao (Kadi Kalol); 199. Dr. B. M. Nanavaty (Ahmedabad); 200. Dr. A. P. Sukla (Ahmedabad); 201. Dr. B. G. Mehta (Ahmedabad); 202. Dr. Nalin M. Vyas (Ahmedabad); 203. Dr. P. R. Trivedi (Ahmedabad); 204. Dr. H. G. Jambhekar (Ahmedabad); 205. Dr. A. J. Dwatia (Ahmedabad); 206. Dr. G. S. Parnaik (Malegaon); 207. Dr. Y. R. Mulay (Ahmedabad); 208. Dr. V. R. Gosavi (Nasik); 209. Dr. D. D. Mitra (Gaya); 210. Dr. S. Gayaprasad (Nagpur); 211. Dr. D. N. Thakur (Direct Member, Assam Prov. Branch); 212. Dr. P. N. Sinha (Patna); 213. Dr. P. V. Joshi (Manmad); 214. Dr. B. K. Modak (Kalyan); 215. A. B. Sarbadhikary (Purnea); 216. Dr. N. B. Choudhuri (Gaya); 217. Dr. V. H. Tilak (Satara); 218. Dr. V. S. Sovani (Poona); 219. Dr. G. H. Thuse (Dhulia) 220. Dr. G. S. Mandlik (Poona); 221. Dr. W. R. Korpe (Akola); 222. Dr. H. S. Badhwar (Kanpur); 224. Dr. S. V. Govinda Setty (Mysore); 225. Dr. B. K. Kapur (Kanpur); 227. Dr. L. Munuswami (Coimbatore); 228. Dr. S. N. Ranade (Poona); 229. Dr. V. Narasimha Rao (Ellore, West Godavari); 230. Dr. D. G. Ojha (Alwar); 231. Dr. Sudhir Nath Sen; 232. Dr. D. V. Venkappa (Madras); 233. Dr. (Miss) G. Hadkar (Broach); 234. Dr. U. R. Pargaonker (Hyderabad).

1. *THE ELECTION, IF NECESSARY, (IN THE ABSENCE OF THE PRESIDENT AND VICE-PRESIDENTS) OF THE CHAIRMAN*:

The President being present, this was not necessary.

2. *CONDOLENCE RESOLUTION*:

The following resolution of condolence was moved from the chair, all members standing and observing silence:—

"This meeting of the Central Council of the I.M.A. places on record its deep sense of sorrow at the sad demise of the following members of the Association and conveys its heartfelt sympathy to members of the bereaved families:—

1. Dr. A. K. Sen (Calcutta); 2. Dr. K. S. Bhandary (S. Kanara); 3. Dr. C. V. E. E. Kambara Mudaliar (Chingleput); Dr. (Capt.) T. C. Gopalan (Madras); 5. Dr. N. C. Banerji (Dhanbad); 6. Dr. G. P. Raghaviah (Madras); 7. Dr. G. S. Katre (Madras); 8. Dr. (Major) M. A. Nair (Madras); 9. Dr. H. L. Vaidya (Bhavnagar); 10. Dr. H. S. Rao (S. Kanara Branch); 11. Dr. P. B. Chitanand (Sholapur); 12. Dr. P. L. Bannerji (Faizabad); 13. Dr. R. K. Narasinha Moorthy (Davanagere); 14. Dr. A. I. Simon (Cochin); 15. Dr. R. Ramchandra Rao (Coimbatore); 16. Dr. (Capt.) A. F. Gomez (Mhow); 17. Dr. K. R. P. Chidambaram (Malabar); 18. Dr. P. Subramannya Iyer (Malabar); 19. Dr. K. Pratap (Coimbatore); 20. Dr. Jagadish Chandra Dutta (Cuttack); 21. Dr. A. K. Mastakar (Bombay); 22. Dr. (Major) N. Gangadharan (Madras); 23. Dr. J. Israyel (Mahboobnagar); 24. Dr. C. G. Shah (Ahmedabad); 25. Dr. V. N. Desai (Sangli); 26. Dr. H. V. Sovanur (Belgaum); 27. Dr. B. U. Purahit (Rajpipla); 28. Dr. S. R. Madangopal Naidu (Madras); 29. Dr. K. S. Captain (Bangalore); 30. Dr. P. S. Kuppaswamy (Trivandrum); 31. Dr. P. S. Srinivasan (Madras); 32. Dr. T. S. Tirumurti (Madras); 33. Dr. G. N. De (Dooars); 34. Dr. R. H. Acharya (Jalgaon); 35. Dr. Sunil C. Bose (Calcutta); 36. Dr. R. K. Narasinhamurthi (Davnagere); 37. Dr. B. N. Sinha (Samastipur); 38. Dr. P. R. Sengupta (Calcutta); 39. Dr. Charu Chandra Basu (Calcutta); 40. Dr. (Miss) J. Grant (Seoni); 41. Dr. F. B. Billimoria (Nagpur); 42. Dr. R. S. Deshpande (Akola); 43. Dr. Aghore Nath Ghosh (Calcutta).

3. *MESSAGES OF INABILITY TO ATTEND*:

Messages of inability to attend this meeting were read out. Messages of inability to attend were received from:—

1. Dr. C. O. Karunakaran (Trivandrum); 2. Dr. B. Tirumal Rao (Vizagapatam); 3. Dr. U. K. L. Narayan Rao (Bellary); 4. Dr. (Major) T. D. Jeena Ratnam (Nilgiris); 5. Dr. K. S. Ray (Jadabpur); 6. Dr. S. C. Vinyek (Ferozepore City); 7. Dr. H. R. Dawar (Delhi); 8. Dr. Sudhir Sen (Jamalpur); 9. Dr. K. L. Sen Sarma (Tinsukia); 10. Dr. Anil Sen (Bettiah); 11. Dr. K. N. Murti (Madras); 12. Dr. P. A. Y. Narayan (Madurai); 13. Dr. G. S. Kowadkar (Belgaum); 14. Dr. H. B. Dutt (Duttapukar); 15. Dr. A. G. Leelakrishnan (Coimbatore); 16. Dr. S. Bhattacharya (Jagatdal); 17. Dr. T. N. Banerjee (Patna); 18. Dr. R. A. Amesur (Bombay); 19. Dr. B. C. Roy (Calcutta); 20. Dr. C. P. Bhat (Bhavnagar); 21. Dr. S. Sivappa (Robertsonpet, K.G.F.); 22. Dr. R. Sadagopa Naidu (Puddukottai); 23. Dr. R. Sankaran (Madras); 24. Dr. V. Krishnamurti (Cudalore); 25. Capt. S. K. Choudhury (Banaras).

4. *CONFIRMATION OF THE PROCEEDINGS OF THE 73RD ORDINARY MEETING OF THE CENTRAL COUNCIL HELD AT PATNA (BIHAR) ON THE 28TH DECEMBER 1952 (COPY CIRCULATED TO MEMBERS)*:

Before the proceedings were confirmed, the following alternative suggestions were made:

Dr. R. C. Goulatia remarked that the publication of the procedings in the Journal was not sufficient and that a reference to the particular Journal publishing these, must be given in the Agenda while these are circulated to members of the Council.

Dr. B. V. Mulay suggested that the proceedings be published in the Journal and additional reprints also be obtained from the Journal office to be circulated in sufficient time before the relevant meetings.

Both these suggestions were noted.

Resolved that the proceedings of the 73rd ordinary meeting be confirmed (proposed by Dr. Shori and seconded by Dr. R. C. Goulatia).

5. *FORMATION OF NEW BRANCHES DURING THE YEAR*:

Due approval was recorded of the formation of new branches during the year as reported in the proceedings of the meetings of the Working Committee.

On a suggestion that consideration of items 6, 8, 9 and 10 be postponed to a later period, an objection was raised. The President ruled that though the items were being taken in order, these items had to be postponed, to be taken up later, for giving time for their study.

7. *TO WRITE OFF THE WHOLE OR PART OF THE ARREARS AGAINST ANY INDIVIDUAL MEMBER OR BRANCH OR OTHER OUTSTANDINGS, IF CONSIDERED NECESSARY*:

Writing off of arrears, as follows, was approved of by the Central Council:—

Assam Prov. Branch	... Rs.	143 0 0
Bengal Prov. Branch	... ,,	74 0 0
Madhya Pradesh Prov. Branch	... ,,	25 0 0
Mysore Provincial Branch	,,	247 8 0
Rajputana Provincial Branch	... ,,	197 8 0
Orissa Provincial Branch	,,	190 0 0
	Rs.	877 0 0

for the year 1951-52

11. *CONSIDERATION OF THE NEW DRAFT RULES OF THE I.M.A. AND AMENDMENTS:*

After some discussion, it was decided to take up the draft rules item by item.

The new draft rules with corrections and amendments were approved.

The Council authorised the Working Committee to make minor changes in the new Rules, if necessary.

At the time of discussion of Bye-law No. 13(B), it was decided that the members of the Association belonging to Armed Forces be given timely information of this Rule.

12. *ELECTION OF OFFICE-BEARERS:*

Honorary General Secretary: The name of Dr. A. P. Mittra (New Delhi) was proposed by Dr. P. K. Guha and seconded by Dr. H. N. Shivapuri.

There being no other proposal, Dr. A. P. Mitttra (New Delhi) was declared elected as the Honorary General Secretary unanimously.

Three Hony. Joint Secretaries: It was decided that this year also Delhi should have two Joint Secretaries and Calcutta should have one Joint Secretary.

The following names were proposed, seconded and declared elected as Honorary Joint Secretaries, unanimously:—

1. Dr. J. N. Bahadur (New Delhi).
2. Dr. S. N. Mitter (New Delhi).
3. Dr. A. N. Roy (Calcutta).

Proposed by Dr. A. P. Mittra and seconded by Dr. G. V. Joshi.

Three Honorary Assistant Secretaries: The following three were proposed:—

1. Dr. Ved Prakash (New Delhi).
2. Dr. M. A. Panwala (Bombay).
3. Dr. M. M. S. Siddhu (Lucknow).

Proposed by Dr. A. P. Mittra and seconded by Dr. H. N. Shivapuri.

There being no other proposals, these were declared duly elected as the three Honorary Assistant Secretaries.

Honorary Treasurer: The name of Dr. H. R. Dawar (Delhi) was proposed by Dr. A. P. Mittra and seconded by Dr. J. N. Bahadur.

There being no other proposal, Dr. H. R. Dawar (Delhi) were declared as the only elected Honorary Treasurer.

13. *ELECTION OF JOURNAL COMMITTEE:*

Editor, Journal of the I.M.A.: The following were proposed:

1. Dr. A. D. Mukharji (Calcutta).
   Proposed by Dr. Chamanlal M. Mehta.
   Seconded by Dr. A. P. Mittra.

Dr. A. D. Mukharji withdrew his name.

1. Dr. P. K. Guha (Calcutta).
   Proposed by Dr. A. D. Mukharji (Calcutta).
   Seconded by Dr. Chamanlal M. Mehta (Bombay).
2. Dr. K. K. Sen Gupta (Calcutta).
   Proposed by Dr. A. N. Roy (Calcutta).
   Seconded by Dr. N. Bhattacharyya (Calcutta).

It was decided by the house to take the votes by ballot and the following were appointed scrutineers by the President:

1. Dr. R. C. Goulatia (Delhi).
2. Dr. A. K. Bose (Calcutta).
3. Dr. S. Samaddar (Patna).

Votes were taken, with the following result:—

Dr. P. K. Guha (Calcutta)—81 votes.

Dr. K. K. Sen Gupta (Calcutta)—49 votes.

Dr. P. K. Guha (Calcutta) was then declared elected as the Editor of the Journal of the Indian Medical Association.

Two Assistant Editors: The following were proposed and seconded:—

1. Dr. C. L. Mukherjee (Calcutta).
2. Dr. P. C. Sen Gupta (Calcutta).
   (Proposed by Dr. P. K. Guha
   Seconded by Dr. A. D. Mukharji).
3. Dr. H. Chakravarty (Calcutta).
4. Dr. H. Roy (Calcutta).
   (Proposed by Dr. J. Mojumdar.
   Seconded by Dr. D. Mukharji).

Votes were taken by show of hands, with the following results:—

1.	Dr. C. L. Mukherjee (Calcutta)	... 52 Votes
2.	Dr. H. Chakravarty (Calcutta)	... 42 Votes
3.	Dr. P. C. Sen Gupta (Calcutta)	... 40 Votes
4.	Dr. H. Roy (Calcutta)	... 35 Votes

Dr. C. L. Mukherjee (Calcutta) and Dr. H. Chakravarty (Calcutta) were duly declared as the two Assistant Editors of the Journal of the Indian Medical Association.

Honorary Secretary, Journal of the I.M.A.

The following were proposed and seconded:—

1. Dr. R. Sinha (Calcutta).
   Proposed by Dr. A. P. Mittra.
   Seconded by Dr. P. K. Guha.
2. Dr. P. K. Chatterjee (Calcutta).
   Proposed by Dr. A. N. Roy.
   Seconded by Dr. Majumdar.

Dr. P. K. Chatterjee withdrew his name.

There being no other proposal, Dr. R. Sinha (Calcutta) was duly elected as the Hony. Secretary of the Journal of the I.M.A.

Five other members of the Journal Committee:

The following names were proposed by Dr. P. K. Guha and seconded by Dr. A. P. Mittra:—

1. Dr. A. D. Mukharji (Calcutta).
2. Dr. A. Dass (Calcutta).
3. Dr. S. C. Seal (Calcutta).
4. Dr. K. P. Dass (Calcutta).
5. Dr. (Mrs.) Mukta Sen (Calcutta).

The following names were proposed by Dr. S. Sen and seconded by Dr. D. Mukherjee:—

1. Dr. Panchanan Chatterjee (Calcutta).
2. Dr. A. C. Ukil (Calcutta).
3. Dr. Chinmoy Ghosh, M.O. (Calcutta).
4. Dr. S. M. Ghosh (Calcutta).
5. Dr. H. K. Roy (Calcutta).

The following were declared elected as five other members of the Journal Committee, the rest of the names having been withdrawn by the proposers:—

1. Dr. A. D. Mukharji (Calcutta).
2. Dr. A. Dass (Calcutta).
3. Dr. S. C. Seal (Calcutta).
4. Dr. S. M. Ghosh (Calcutta).
5. Dr. H. K. Roy (Calcutta).

14. *APPOINTMENT OF HONORARY AUDITORS:*

The house unanimously re-elected M/s. Khanna Annandum, Chartered Accountants, Delhi, and M/s. G. Basu and Co., Chartered Accountants, Calcutta, as Honorary Auditors for the Central Office, Delhi and Journal Department, Calcutta, respectively.

(Proposed by Dr. S. C. Sen and
Seconded by Dr. A. P. Mittra).

15. *APPOINTMENT OF HONORARY LEGAL ADVISERS:*

Mr. K. K. Raizada of Delhi and Mr. R. K. Deb of Calcutta were unanimously re-elected as Honorary Legal Advisers for the Central Office, Delhi and Journal Department, Calcutta, respectively (proposed by Dr. S. C. Sen and seconded by Dr. A. P. Mittra).

6. *CONFIRMATION OF THE PROCEEDINGS OF THE WORKING COMMITTEE MEETINGS:*

1. 47th Meeting of the Working Committee held at Calcutta from 30th April to 2nd May 1953.

2. 48th Meeting of the Working Committee held at Lucknow on 5th and 6th October 1953.

3. 49th Meeting of the Working Committee held at Hyderabad (Dn.) on 24th December 1953 (circulated to members).

Dr. S. R. Choudhury pointed out that Central Council members should be informed of the reports of the Sub-Committees. He also emphasised that information regarding matters of importance be circulated to the Provincial Branches as early as possible.

Dr. A. P. Mittra, the Hony. Joint Secretary, explained the difficulties, and it was noted for future.

"Resolved that the proceedings of the Calcutta and Lucknow meetings (item No. 1 and 2), as circulated, be passed".

Proceedings of the Hyderabad Working Committee meeting (item 3) as circulated were approved of subject to two corrections which are as follows:—

1. Rs. 3,000/- (Rupees three thousand only) were granted by the Central Health Ministry for "Your Health" (and not Rs. 3,500/-).

(Item No. 19(d) of the proceedings of the 49th meeting of Working Committee.

2. *Item* 19(*e*): As corrected it will read as follows:—

It was read before the house and submitted that the house should revise its previous decision.

8. *ADOPTION OF THE ANNUAL REPORT FOR THE PREVIOUS YEAR (COPY CIRCULATED).*

An objection was raised to item marked 12 in the Annual Report which needed correction.

Dr. A. P. Mittra explained that elections of representatives of the I.M.A. on (1) the Employees' State Insurance Corp. and (2) the Medical Benefit Council of the E. S. Insur. Corp. were made after the 30th September, 1953 and hence were not incorporated in the Annual Report.

Resolved that the Annual Reports of the Central and Journal Offices as circulated and corrected be adopted.

9. *ADOPTION OF THE AUDITED ACCOUNTS FOR THE YEAR* 1952-53.

(a) *Central Office*: Dr. N. Bhattacharji pointed out the objection of the Auditors to which the Hony. General Secretary explained, that it was due to omission of words "Examined and found correct as per our report of even date", in the statements of last year's accounts.

Dr. Bose brought to the notice of the house the item pertaining to Provident Fund account. Dr. S. C. Sen, the the Hony. General Secretary explained the difficulties in not regularising the Provident Fund accounts of members of staff of the Central Office.

"Resolved that the Audited Accounts of the Central Office for the year 1952-53, as circulated to the members, be adopted unanimously". (Proposed by Dr. Roy and seconded by Dr. R. C. Goulatia).

(b) *Audited Accounts of Journal Department*: Dr. S. Roy Choudhury pointed out and asked for the details of salary and establishment account. Dr. R. Sinha explained the points raised regarding accounts. It was suggested by the house that in this head, details of amounts paid to the staff may be made available at the next annual meeting of the Central Council.

The Audited Accounts of the Journal Department for the year 1952-53, (vide Appendix), were duly adopted unanimously. (Proposed by Dr. C. S. Thakkar and seconded by Dr. J. N. Bahadur).

OPERATION OF BANK ACCOUNTS:

The following resolutions were passed unanimously:—

1. Resolved that the Hony. General Secretary Dr. A. P. Mittra and the Honorary Treasurer Dr. H. R. Dawar be authorized to operate the accounts of the Indian Medical Association jointly and during the absence of the Honorary General Secretary, any one of the Joint Secretaries at Delhi with the Honorary Treasurer will operate in his place.

2. Resolved that the Imprest Account of the Journal of the Indian Medical Association will be operated jointly by two of the following officers, viz. the Editor (Dr. P. K. Guha), the two Assistant Editors (Dr. C. L. Mukherjee and Dr. H. Chakravarty) and the Hony. Secretary of the Journal (Dr. R. Sinha).

3. "Resolved that Dr. P. K. Guha, the Editor and Dr. R. Sinha, the Hony. Secretary be authorised to operate accounts of 'Your Health' of the Indian Medical Association".

10. *CONSIDERATION OF THE BUDGET ESTIMATES FOR THE COMING YEAR* 1953-54:

(a) Central Office (b) Journal Departtment.

(a) *Central Office*: Dr. A. K. Bose compared the figures of Income and Expenditure of the year and of previous years and wanted further clarifications on some proposed increased expenditure accounts. All such items were discussed.

As decided by the Working Committee to make an increase of Rs. 10 p.m. in dearness allowance of members of staff of Central Office and on account of other charges, Rs. 5,840/- were further added to the proposed expenditure head.

Dr. S. C. Sen explained, in detail, all the items of the proposed budget.

Increase in Stationery head of the Budget was explained in detail, by the Honorary General Secretary.

Dr. S. N. Sinha of Ranchi wanted to know that if the expenses incurred during the year exceeded the proposed amount, what would happen at the close of the year.

The Honorary General Secretary explained the position and informed the house that sanction for supplementary grant in this connection is formally obtained from the Working Committee and the Central Council at the annual meetings.

Resolved that the Budget Estimates of the Central Office be adopted. (Proposed by Dr. N. Bhattacharyya and seconded by Dr. Ugrankar).

(b) *Journal Department*: It was decided that the accounts of "Your Health" and Journal of the I.M.A. should be combined from next year, i.e. from October 1954. A request to control "Your Health" by the Journal Committee was accepted by Dr. Guha. It was also decided that the Journal Committee would also act as the Committtee for Your Health, with Dr. P. K. Guha as the Editor and Dr. R. Sinha as the Hony. Secretary.

Dr. R. C. Goulatia wanted to know the details of Rs. 15,358/- as shown written off.

Dr. R. Sinha explained the item that it included Rs. 10,000/- as the amount advanced from the funds of the J.I.M.A. to "Your Health", which was unrealisable.

A suggestion was made that Travelling expenses, Foreign, be only incurred with the consent of the Working Committee. After some discussion it was, however, agreed that the amount shown under the head "Travelling (foreign") i.e. Rs. 7,000/- be withdrawn from the budget estimates of the year 1953-54.

Dr. S. Roy Choudhury enquired about the word "approximate" shown in the heading "Expenses incurred during the year 1952-53". Dr. Sinha explained to the house that these figures were really approximate as they were prepared prior to audit.

After some further discussion, the Budget Estimates of the Journal Department with the above correction was adopted, unanimously. (Proposed by Dr. M. M. S. Siddhu and seconded by Dr. R. C. Goulatia).

16. *RESOLUTIONS BROUGHT FORWARD BY THE PROVINCIAL BRANCHES:*

17. *RESOLUTIONS BROUGHT FORWARD BY THE LOCAL BRANCHES:*

18. *RESOLUTIONS BROUGHT FORWARD BY THE INDIVIDUAL MEMBERS:*

1. *Resolutions from Travancore-Cochin Prov. Branch*—Dropped.

2. *Resolution from Calcutta Branch*—Dropped.
3. *Resolution from Gaya Branch*—Dropped.
4. *Resolution from Patna Branch*—Dropped.
5. *Resolution from Dhanbad Branch*—Dropped.
6. *Resolutions from Kalyani Branch*—Dropped.
7. *Resolution from Kistna Branch*—Dropped.
8. *Resolution from Kolhapur Branch*—Forwarded to Subjects Committee.
9. *Resolution from Berhampore Branch*—Considered along with Draft Rules.
10. *Resolutions from Guntur Branch*—Dropped.
11. *Dooars Branch*—Dropped.
12. *Jalpaiguri Branch*—Dropped.
13. *Bhatinda Branch*—Forwarded by Subjects Committee.
14. *Kanpur Branch*—Dropped.

19. *CONSIDERATION OF INVITATIONS FROM LOCAL BRANCHES FOR HOLDING THE 31ST ALL-INDIA MEDICAL CONFERENCE*:

The Honorary General Secretary informed the house that an invitation had been received from the Lucknow Branch to hold the 31st All-India Medical Conference at Lucknow.

The House unanimously decided to hold the 31st Session of the All-India Medical Conference at Lucknow.

20. *REPORTS FROM THE COMMITTEES, SUB-COMMITTEES, IF ANY*:
Nil.

21. *ANY OTHER BUSINESS WITH THE PERMISSION OF THE PRESIDENT*:

1. *Discussion on the Employees State Insurance Scheme*:

Dr. Chamanlal M. Mehta put his views before the house in detail, and advised a review of the position taken by the Indian Medical Association in March, 1953. Dr. A. K. Bose explained the conditions in Bengal and awaited the directive from the Central Office. In this connection, the Editor of the Journal was requested to write a suitable Editorial on the subject in the near future. Dr. J. Mojumdar discussed the situation and placed certain facts and informed the house about a Press statement in the name of Dr. A. D. Mukharji. Dr. Mukharji denied having made any such statement.

Dr. Mojumdar also told the house that Dr. A. C. Ukil and he himself had been asked to join the Allocation Committee, Employees' State Insurance Scheme at Calcutta which they had declined. Dr. S. C. Sen placed before the house relevant information from Coimbatore Branch and advised reconsideration of the stand taken by the I.M.A. previously. Dr. Shori explained the position in Punjab and said that the I.M.A. should insist on the recommendations of the Working Committee. Dr. Thakkar opposed any immediate decision, but suggested that time should be given and no hurried decision should be arrived at. Dr. Shukla explained to the house the position and requested the house to consider deeply the matter and also requested the Provincial Secretaries to contact Regional Boards, and advised co-operation with the Corporation on humanitarian considerations. Dr. N. Bhattacharyya spoke that we must guard position before deciding to take a retreating step.

Dr. Mulay suggested not to take any hasty action. He was of opinion that a small Committee should be formed to go into the matter deeply.

The House decided to discuss the matter again on the 29th December 1953 in the next ordinary meeting and to take the final decision.

2. Dr. C. S. Thakkar, Dr. R. C. Goulatia and several other members thanked the President for his selfless and sincere services to the Association during the tenure of his office. Dr. B. V. Mulay President thanked the members of the Central Council and the office-bearers and staff of the Central and Journal offices for their sincere co-operation and assistance.

The meeting then came to a close with a vote of thanks to the Chair.

B. V. MULAY
President

S. C. SEN,
Honorary General Secretary.

TRAVANCORE COCHIN PROVINCIAL MEDICAL CONFERENCE, NAGERCOIL

The Conference was held at Nagercoil on the 14th November 1953. Over 1,000 representatives from the branches attended the session.

Dr. M. Mathias, Chairman of the Reception Committee in his welcome address referred to the important place which Nagercoil town occupied in this State and how its healthy climate made it the chief centre for the treatment of Tuberculosis.

DR. M. MATHIAS, CHAIRMAN OF THE RECEPTION COMMITTEE

Dr. C. O. Karunakaran, the president in his speech recalled that the Medical Profession was the earliest among learned professions to organise itself. That was done not for material gains or with trade union outlook but for the furtherance of medical knowledge and for service to the people. It was for this reason that the code of Medical Ethics had enjoined on all doctors to become members of a recognised professional association. The miraculous speed with which new discoveries were being made in every field of Medical Science made it impossible even for the ablest in the profession to keep in touch with all recent developments. The exchange of ideas at meetings of the association was the best method for this. There would be problems of local importance, like the outbreak of dysentery among children reported by the members of the Nagercoil Branch some months ago, which did not respond to the usual drugs. In collaboration with the Public Health Laboratory and the Medical College the branches could investigate such diseases and that will be an answer to critics who said that we were neglecting research.

He said that thousands of free Cholera inoculations which the members of the Nagercoil Branch had done during the recent epidemic was an example of the service they could do to the poor.

Problems of great magnitude were before them and more were bound to crop up during these rapidly changing times. The introduction of a lower standard of instruction in Modern Medicine in institutions meant to teach other systems of Medicine was sure to defeat the policy of upgrading of medical standards, and if those trained in such institutions were allowed to practise modern medicine, then medical

DR. C. O. KARUNAKARAN, THE PRESIDENT OF THE CONFERENCE

registration would be meaningless. The provision contained in the new Act enabling unqualified persons to register in more than one system was a retrograde step. The employees Insurance Scheme would be extended to our State in 1954. There was growing complaint that in the operation of this scheme disproportionately large sums of money were spent on administration instead of on benefits to the insured or on adequate remuneration to their Doctors. Unless we act unitedly under the banner of the Association we would not be able to solve such problems to our satisfaction.

* * * *

Dr. A. Hojer, Principal of the Medical College, Trivandrum who inaugurated the conference, said that the progress of Medicine in recent years had shown that the foundation for good health in youth and middle age should be laid down when the baby was in the mother's womb and in the years immediately after birth. The successful application of this principle had in the Western countries shifted the incidence of diseases to the old age group. More and more people lived to an old age and so they had their own diseases. It is now being realised that if diseases of old age are to be minimised greater attention is to be paid to health during middle age.

He said that the main problem, at all stages, was one of adequate nutrition. He expected that in the next few decades the population of India, would become static. Otherwise nutritional standards could not be raised. Family planning was therefore a problem of immediate urgency. He suggested that investigations should be carried out into the indigenous systems especially with reference to the treatment of rheumatism.

DR. A. HOJER INAUGURATED THE CONFERENCE

RESOLUTIONS PASSED AT THE CONFERENCE

1 "This Association views with grave concern the introduction of subjects like medicine, surgery, midwifery, etc., in the syllabus for the Diploma and Degree courses in the Government Ayurvedic College, Trivandrum and requests the Central Association to do whatever is necessary in the matter.

2. This association views with dismay the retrograde provisions contained in the new Travancore-Cochin Medical Practitioners Act, enabling registration of persons in more than one system of medicine without recognised qualification. The Association feels that such registration will make it impossible for any council to exercise effective control over the professional conduct of such practitioners. The Association resolves that this matter may be brought to the notice of all the medical councils of the State.

3. Resolved to request the Government to exempt Medical Practitioners from the possession of license for the stocking of spirituous preparations up to a limit of 6 lbs. of each tincture, as is the practice in the Madras State, since these preparations are not stocked for trade.

* * * *

The Scientific Session commenced with Dr. Vadamalayan, the well-known surgeon of Madura in the chair. Dr. C. O. Karunakaran introduced the President and the Speakers.

Dr. Vadamalayan in his address spoke on the impressions he got about the advance of modern surgery, during his recent visit to the U.S.A. and England.

Dr. T. K. Raman, Professor of Medicine, spoke on the diagnosis and treatment of typhoid fever. Dr. Jenkins of the L.M.S. Hospital Neyyoor spoke on the diagnosis of acute abdominal conditions and Dr. Sitharam of the Catherine Booth Hospital spoke on the treatment of heart failure. There were interesting discussions on all subjects.

APPENDIX

AUDITED ACCOUNTS OF THE JOURNAL DEPARTMENT FOR THE YEAR 1952-53 (OCTOBER 52-SEPTEMBER 53)

(Adopted at the 14th Annual Meeting of the Central Council of the I.M.A. held at Hyderabad in December 1953)

Messrs. Indian Medical Association,
Journal Department,
Calcutta.

Dear Sirs,

In enclosing herewith a copy of your audited accounts for the year ended 30th September, 1953, we have to make the following observations:—

Sundry Debtors: The balance due from each party should be confirmed.

Liabilities as recorded in the books have been incorporated into these accounts.

Budget Estimate: In some cases, expenses on certain accounts have exceeded the budget estimate.

Amount due from Central Office Written Off: A sum of Rs. 5,358-4-0 being part of the amount due from the Central Office has been written off vide resolution of the Working Committee Meeting held on the 21st December, 1952 as stated in the Central Office's letter No. 2606/52-53.

Contribution to "Your Health": A sum of Rs. 10,000/- was advanced to "Your Health" to meet their expenses, but this amount has been written off under the above heading vide resolution of the Association on item No. 7(3) of the meeting held on 22-12-52.

Central Reserve Account: A sum of Rs. 16,622-6-0 has been transferred to Central Reserve Account from Fund account vide Head Office letter No. 450/53-54.

Subject to the above observations, we report that we have examined the Balance Sheet of the Indian Medical Association (Journal Department) dated 30th September, 1953 as above set forth and the annexed Income and Expenditure Account for the year ended on that date with the books and vouchers kept in Calcutta and have found the same to be in accordance therewith and the Balance Sheet exhibits a true and correct view of the state of affairs of the Association according to the best of our information and the explanations given to us and as shown by the books of the Association.

CALCUTTA
The 11th December 1953.

Yours faithfully,
G. BASU & Co.

INDIAN MEDICAL ASSOCIATION

(Journal Department)

Receipts and Payments Account for the year ended 30th September, 1953

RECEIPTS:

To *Opening Balance*	Rs.	A.	P.	Rs.	A.	P.
In Hand	26	7	3			
At Bank on Current Account	52,246	6	5			
At Post Office Savings Bank	5,750	5	3	58,023	2	11
Advertisement				2,04,053	0	1
Subscriptions				2,565	10	0
Miscellaneous Receipt				1,081	5	3
Central Office				291	14	9
Staff Provident Fund				1,966	4	3
Subscription received in Advance				1,278	8	3
Interest on Bank Deposits				799	9	0
Contribution from Central Department				4,684	8	9
Income-tax				54	13	6
Refund of Honorarium drawn by Hony. Secretary				800	0	0
				2,75,598	12	9

PAYMENTS:

By	Rs.	A.	P.	Rs.	A.	P.
Presidency Postmaster (for Neo-post Franking Machine)				1,900	0	0
Binding Charges				8,040	10	0
Telephone Charges				422	12	0
Printing Charges				40,175	5	0
Agency Commission				7,392	1	6
Carriage and Freight				568	5	0
Postage and Telegram				5,908	6	3
Subscriptions to Newspapers and Periodicals				678	9	0
General Charges				2,252	15	3
Embossing Plates				1,093	7	3
Paper Purchases				89,283	10	0
Electric Charges				802	10	6
Stationery				937	3	0
Repairs and Renewals				336	14	6
Bank Charges				230	12	0
Blocks and Designs				2,262	14	3
Books and Maps				159	12	3
Salary and Establishment				34,781	12	3
Honorarium and Conveyance allowance to Office-Bearers				5,600	0	0
House Rent				1,500	0	0
Godown Rent				95	4	0
Social and Entertainment				740	12	6
Staff Provident Fund Contribution				625	2	3
Audit Fees				150	0	0
Advertisement—						
Refunded	753	8	9			
Cheques Returned	1,676	0	0	2,429	8	9

(Contd. to next page)

Receipts and Payments Account for the year ended 30th September 1953 (contd. from page xxxiv)

RECEIPTS:

	Rs.	A.	P.	Rs.	A.	P.

INDIAN MEDICAL ASSOCIATION

(Journal Department)

Balance Sheet as at 30th September, 1953

LIABILITIES:	Rs.	A.	P.	Rs.	A.	P.
Fund						
As per last Balance Sheet	1,20,932	3	5			
Less amount transferred to Central Reserve account	16,622	6	0			
	1,04,309	13	5			
Add Surplus as per Revenue account	4,154	7	3	1,08,464	4	8
Central Reserve Account				16,622	6	0
Security Deposit				700	0	0
Staff Provident Fund				7,716	9	6
Liabilities for Expenses	150	0	0			
Provident Fund Contribution	1,200	2	0			
Advance received from Advertisers	10,797	8	9			
Subscription received in Advance	1,278	8	3	13,426	3	0
				1,46,929	7	2

ASSETS:	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Machinery, at cost									
Brought Forward				11,533	3	3			
Less Depreciation									
Brought Forward	6,383	14	3						
Since Added	1,029	5	0	7,413	3	3	4,120	0	0
Furniture & Fixture, at cost									
Brought Forward	4,973	5	0						
Since Added	2,247	1	3	7,220	6	3			
Less Depreciation									
Brought Forward	1,906	5	0						
Since Added	478	1	3	2,384	6	3	4,836	0	0
Cycle, at cost				80	0	0			
Less Depreciation									
Brought Forward	72	0	0						
Since Added	7	0	0	79	0	0	1	0	0
Books, & Maps, at cost									
Brought Forward	2,182	9	6						
Since Added	159	12	3	2,342	5	3			
Less Depreciation									
Brought Forward	816	11	6						
Since Added	305	9	9	1,122	5	3	1,220	0	0
Sundry Debtors							24,957	13	11
Investment, at cost 3% 1st Development Loan 1970-75 (Face Value Rs. 28,000/-) (Securities were held by the Central Bank of India Ltd., on 30th September, 1952 against overdraft arrangement up to Rs. 20,000/-)							28,548	4	3
Central Department Current Account							14,462	12	0
Prepaid Subscription							288	3	6
Prepaid Repairs							58	0	0
Prepaid Insurance							44	6	6
Stock of Paper in Hand As certified by the Secretary							18,937	3	0
Postal Savings Bank Account							7,716	9	6
Cash Balance									
In Hand (including cheques)				2,415	8	9			
With Presidency Postmaster				484	3	6			
At Banks on Current Account				38,839	6	3	41,739	2	6
							1,46,929	7	2

ERRATA

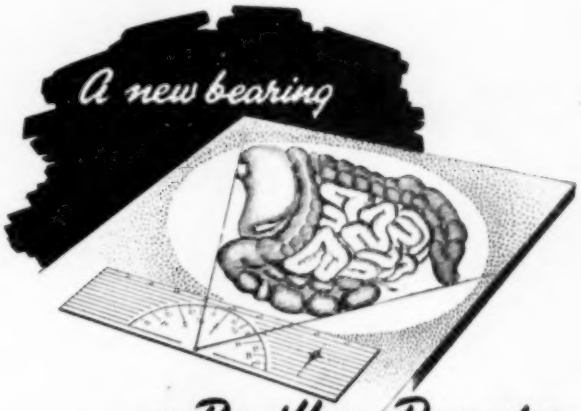
1. Page 219, please delete the word 'Provisional' from Heading 2nd line.
2. Page 219—Under *Expected Expenditure* 2nd column figure heading please read "Approx. for 1952-53"; 3rd column figure heading please read "As Budgeted for 1953-54".
3. Page 219—After the Expected Expenditure under item "Travelling—Inland" (as budgeted for 1953-54), please put down the figure (12) and kindly refer to explanation (12) on the left had column.
4. Page 219, explanation under (13) is not necessary as the relevant item (foreign travelling) of expenditure has been withdrawn from the Budget estimates for the year 1953-54, at the suggestion of some members of the Central Council.

CALCUTTA,
6, Hastings Street,
11th Decem., 1953.

In terms of our attached report of even date.
Sd./- G. BASU & Co.,
CHARTERED ACCOUNTANTS,
Auditors.

V ASSAM PROVINCIAL MEDICAL CONFERENCE

The 5th Assam Provincial Medical Conference is being held at Tezpur on 28th February, 1st and 2nd March, 1954.



on Bacillary Dysentery

Emphasis has been given recently to the use of combined chemotherapy in infections and to the merit of the judicious combination of antibiotics and sulphonamides in the prevention of bacterial resistance.

In the treatment of many infections of the gastro-intestinal tract, combined therapy with streptomycin and sulphaguanidine is a distinct advance on previous forms of treatment.

Guanimycin, in which oral streptomycin sulphate is combined with sulphaguanidine, is indicated in the treatment of bacillary dysentery, gastro-enteritis, salmonella food poisoning and other mixed infections of the gastro-intestinal tract in infants, children and adults.

Guanimycin is issued as a free-flowing powder from which a smooth, palatable homogeneous suspension may be made by simple mixture with water.

GUANIMYCIN

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ORAL STREPTOMYCIN SULPHATE with SULPHAGUANIDINE

In bottles to prepare 4 fluid ounces.

Literature on application.

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(INCORPORATED IN ENGLAND)
CALCUTTA BOMBAY

Prelude to asthma?

not necessarily . . .

Tedral, taken at first sign of attack, often forestalls severe symptoms.

in 15 minutes...Tedral brings symptomatic relief with a definite increase in vital capacity. Breathing becomes easier as Tedral relaxes smooth muscle, reduces tissue edema, provides mild sedation.

for 4 full hours...Tedral maintains more normal respiration for a sustained period—not just a momentary pause in the attack.

Prompt and prolonged relief with Tedral can be initiated any time, day or night, whenever needed, without fear of incapacitating side effects.

Tedral provides:

theophylline	2 gr.
ephedrine	3/8 gr.
phenobarbital	1/8 gr.

in boxes of 24 tablets.

Enteric time-coated tablets also available to act 4 hours after ingestion.

Tedral

WARNER-CHILCOTT *Laboratories, Inc*

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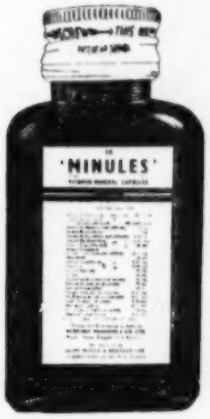
Complete Supplementation for Incomplete Diets



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For all those patients who for any reason get some, but not all, the daily vitamin and mineral requirements, you may want to prescribe a nutritionally complete, balanced supplemental vitamin—mineral formula—such a formula is available in 'Minules'.

EACH CAPSULE CONTAINS

Vitamin A Palmitate (synthetic)	1,667 U.S.P. units	Folic Acid	0.33 mg.
Vitamin D_3 (activated 7-dihydrocholesterol)	150 U.S.P. units	Choline bitartrate	40 mg.
Vitamin B_1 (thiamine hydrochloride)	2 mg.	Inositol	10 mg.
Vitamin B_2 (riboflavin)	1 mg.	Phosphorus (as dicalcium phosphate)	58 mg.
Vitamin B_6 (pyridoxine hydrochloride)	0.33 mg.	Calcium (as dicalcium phosphate)	75 mg.
Vitamin B_{12} (crystalline)	1.67 mcg.	Iron (as ferrous sulphate)	15 mg.
Vitamin C (ascorbic acid)	20 mg.	Manganese (as manganese sulphate)	0.1 mg.
d-Alpha-Tocopherol (mixed tocopheryl acetates)	2.1 mg.	Molybdenum (as sodium molybdate)	0.3 mg.
Niacinamide	10 mg.	Iodine (as potassium iodide)	0.033 mg.
Calcium Pantothenate	0.5 mg.	Zinc (as zinc sulphate)	0.1 mg.
		Magnesium (as magnesium sulphate)	10 mg.
		Cobalt (as cobalt sulphate)	0.2 mg.

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. . . . essential requirements to progressive recuperation

. . . in asthenic conditions

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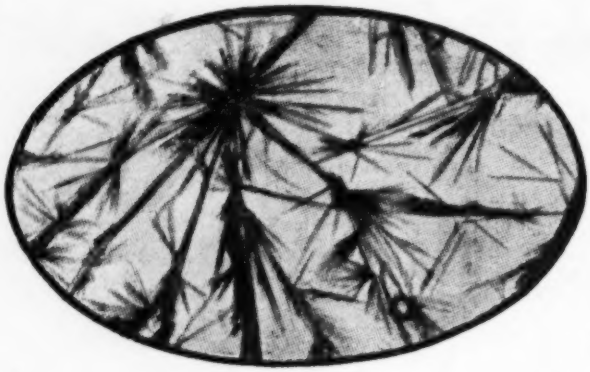

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1. Angiology 3:1 (Feb.) 1952.
2. Angiology 3:16 (Feb.) 1952.

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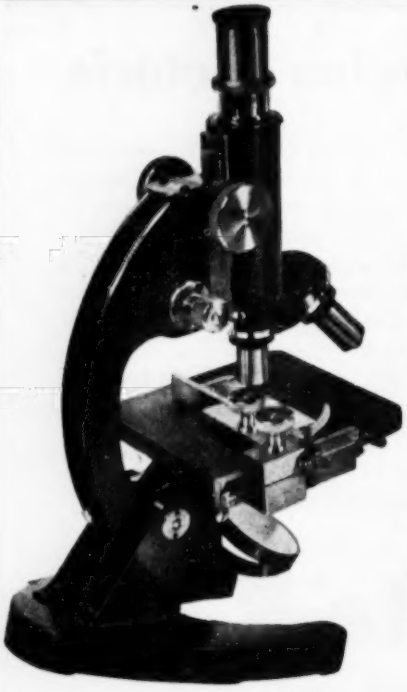

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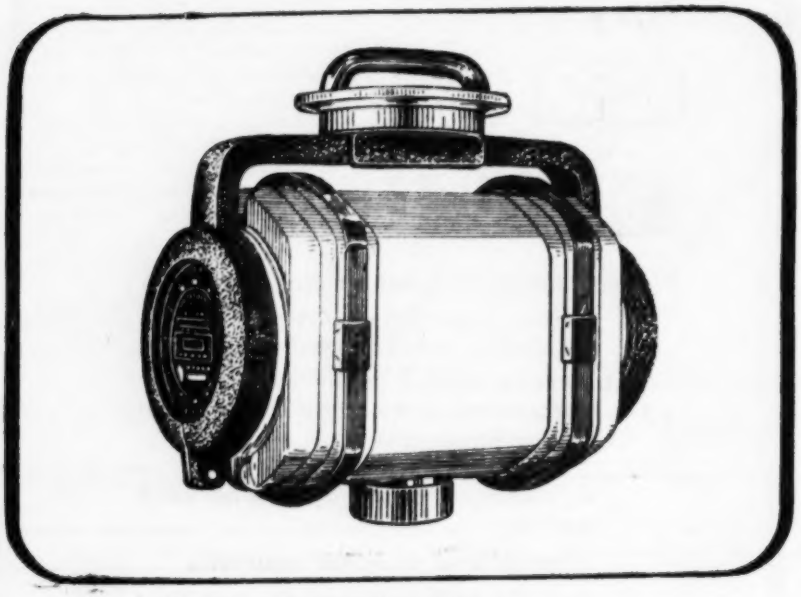

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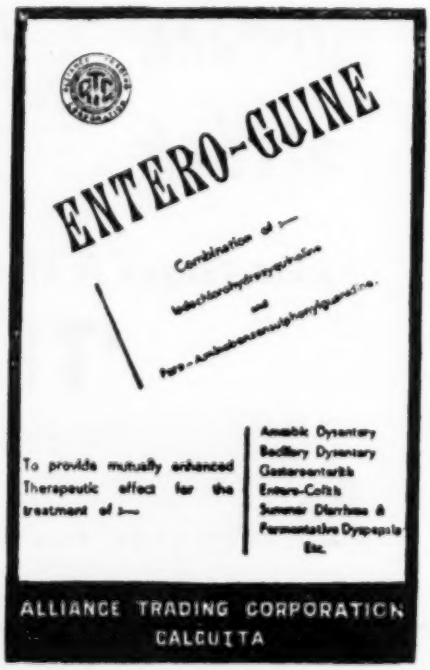

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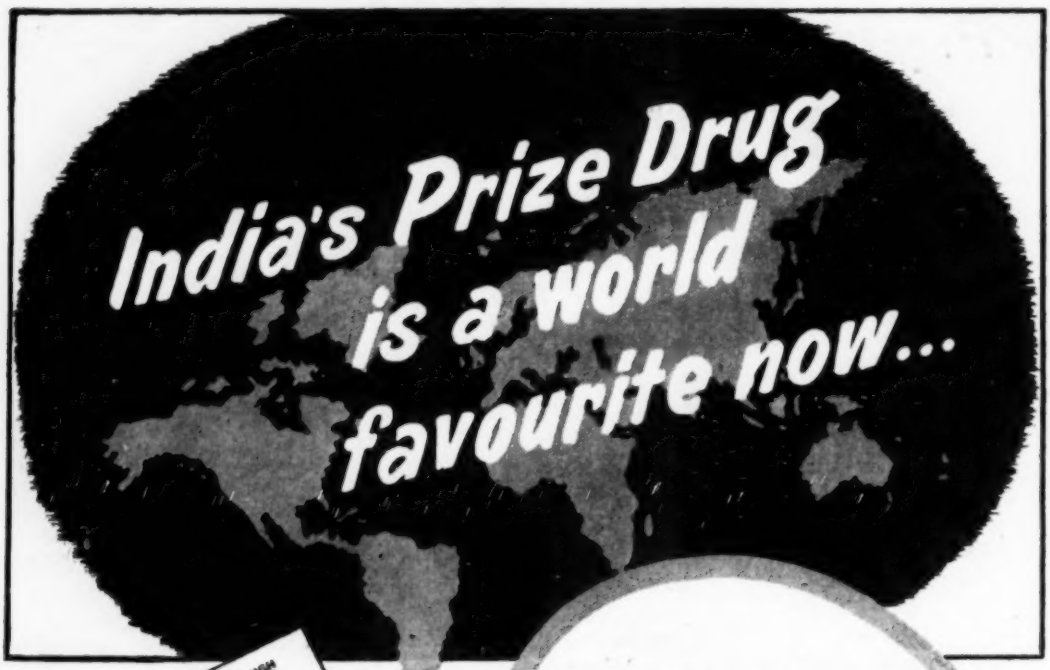

REMEDY FOR HIGH PRESSURE

New Delhi Feb. 7th '53

A Boston message says that two doctors of the Massachusetts Memorial Hospital report that the Indian medicine, popularly known as 'snake plant' and technically 'Rauwolfia Serpentina', lands down high blood pressure for months and relieves patients of nervousness, headache and insomnia. For at least a century Indian medical men have been prescribing the drug for high blood pressure, insanity, epilepsy and insomnia.

(A. B. Patrika)

A NEW DRUG FOR HIGH BLOOD PRESSURE

New Jersey May 16, '53

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Most bacterial invaders encountered in ophthalmology are sensitive to Chloromycetin. With Chloromycetin Ophthalmic Ointment, irritation is extremely rare and thus it repeatedly evokes from patients such comments as "soothing", "comfortable", "felt good" etc. Chloromycetin Ophthalmic Ointment is supplied in 1/8 oz. dispensing tubes containing 1% Chloromycetin.

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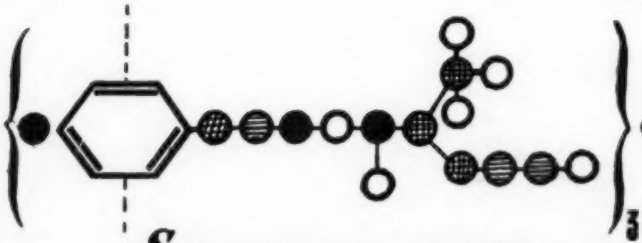
Editor—Dr. P. K. GUHA

Lepetit's another hit

Lepetit

STREPTOTIBINE

LEPETIT



STREPTOTIBINE LEPETIT (DIHYDRO-STREPTOMYCIN TRI-ISONICOTYLHYDRAZONE PYRUVATE) IS THE RESULT OF THE SALIFICATION OF 3 MOLECULES OF PYRUVIC HYDRAZONE WITH 1 MOLECULE OF DIHYDRO-STREPTOMYCIN.

STREPTOTIBINE IS INDICATED IN ALL TUBERCULAR FORMS AND LOCALISATIONS, IN WHATSOEVER STATE, AND MORE PRECISELY IN:

- PULMONARY TB. OF WHATSOEVER TYPE AND STATE
- MILIARY TB.
- TUBERCULAR MENINGITIS
- TB. OF THE LARYNGES, PHARYNGES AND BRONCHI
- OF THE GASTROENTERIC TRACT
- OF THE RENAL APPARATUS
- OF THE SEROUS MEMBRANES, (PLEURITIS, PERITONITIS EMPYEMA, ETC.)
- OF THE SKIN
- OF THE LYMPH GLANDS
- OF THE BONES
- OF THE EYES

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DOSAGE & USE

THE AVERAGE ADULT DOSE IS 1-2 VIALS DAILY ADMINISTERED INTRAMUSCULARLY. IN CHILDREN THE DOSE IS REDUCED ACCORDING TO AGE AND WEIGHT. DISSOLVE THE CONTENTS OF THE VIAL IN 2-5 CCS. OF DISTILLED WATER AND INJECT INTRAMUSCULARLY. THE INJECTIONS ARE PERFECTLY TOLERATED. SOLUTIONS OF STREPTOTIBINE MAY ALSO BE USED FOR LOCAL APPLICATION (FISTULAS, ABCESS, CAVITIES EMPYEMAS, ETC.) AND FOR AEROSOLS.

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